Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY TELEPHONY PUBLISHING CORP.
608 S. Dearborn St., CHICAGO

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Entered as second-class matter September 4, 1908, at the postoffice at Chicago, Ill., under act of March 3, 1879.

Volume 95
Number 4

CHICAGO, SATURDAY, JULY 28, 1928

Subscription — 10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

A Defense of the Utilities Using the Public Press

Because the Federal Trade Commission investigation has shown that some of the utility organizations have been active in getting utility information into the newspapers and into the schools and colleges, they have been made the target of considerable hostile criticism. Most of the adverse comments have come from that section of the press that is always eager to rave against corporations, or from politicians who have an ax to grind and think the quickest way to get a sharp edge on said ax is to take a rap at capital.

It may be true that over-zealous publicity agents of the electric light and power interests showed poor judgment in some of their activities, but it does not necessarily follow that the official frown should be directed against the legitimate efforts of all public service companies to tell the people what they are doing. Yet that is what some of the radical opponents of the utilities seem to demand. Their violent prejudices make them madly unfair, and their plan now is to induce the press of the country to give only one side of the controversy.

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The editor of one Middle West daily has come out in an open letter which states the situation in a common sense fashion.

"I am one editor," he says, "who refuses to be stampeded by the effort being made at Washington to indicate that all utility companies in this country are a lot of grafters, and that every move they make in the way of publicity or extension of their systems is caused by sinister motives.

"My personal viewpoint is that it is no different for the utilities to send out matter of interest pertaining to the development and expansion of gas companies, electric light companies, power companies and telephone companies than it is for the bankers to send out literature pertaining to the financial condition of the country, and that it is fully as important to know what is going on in the utility fields in the way of new inventions and new ideas as it is to inform our public about the latest developments in machine guns, in airplanes, in automobiles and automotive accessories.

"In fact, to our way of thinking, it is certainly more important for the individual to know about these things pertaining to the utilities because they have a more personal relation with all citizens than have any other lines of activity."

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There is good sense in this statement, and all managers of public service companies should adopt the idea that the individual citizen is vitally interested in their work. Stating that all branches of industry are seeking publicity, the editor's letter then makes this comparison:

"If you could look at our mail and see the publicity matter that comes in from every branch of business every day, and if you could know how closely we have to scrutinize it to see that it is not advertising pure and simple, and compare that class of propaganda with the character of publicity matter sent out by the utilities, you must come to the conclusion, as I have, that there is news in the utility matter whereas in much of the other it is purely an effort to get free advertising."

"With the intimate contact utilities have with the public today," continues this editor, "it seems to me quite out of tune with the advance of civilization for some of these so-called leaders to try to bring attention to themselves by shouting 'Wolf, wolf' at all utility organizations.

"If it were the fact that the utilities are giving poorer service and more expensive service than they have in the past, there might be some reason for such an argument. Instead of that, we find more efficiency, and we find that rates, as a whole, are dropping rather than rising. We find people having more and more conveniences due to the rapid development of the utility field, and, therefore, we find the people more happy and contented in their homes as a result of these improvements."

"Possibly it may be more popular to join in with a big crowd and hop on the utilities and impugn their every effort to get people to use more of their product, but it does not strike me that way."

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Concerning utility information in the schools and colleges, this editor has this to say, and he hits the nail on the head:

"We study in our schools about the history of Rome and what the Greeks and Turks did or did not do. We gasp in amazement at what the Egyptians accom-

plished thousands of years ago, and yet we have a handful of critics who impugn the motives that prompt the utility information committees in getting out first-hand information on what is being done in this age and in our own country."

"With the important part electricity, gas and the telephone are playing in the every-day life of America today, I cannot see where there is any branch of industry which should be taught any more consistently and persistently than that which has to do with telephones, gas and electricity. It is probably just as important, or more important, for students in schools these days to know about these utilities as it is for them to know about repairing automobiles and tinkering around with carpenters' tools, band instruments, etc., which subjects are taught so extensively in these days of vocational training.

"I cannot imagine any branch of science that is more closely connected with our home life and business life than those branches that could be included in the so-called public utility. I have been amazed at the efforts to chide the utilities for issuing publicity matter sent to newspapers, and I personally resent such efforts because I realize if I do not see news value in these contributions, I do not have to use them. However, I have found much news value in them, and nobody in Washington is going to scare me by painting a picture of 'newspaper editors who have fallen for the propaganda sent out by utility companies.'"

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And here is another comparison made by this outspoken Middle West editor which is worth reading:

"The automotive industry has grown by leaps and bounds during the last few years, and the newspapers have given much free space to that fact. However, the growth of the automotive industry is not comparable with the utility expansions that have marked every section of our country, and if it is proper to tell about the automobile business, or about the banking business, or about the mercantile business, or about the baseball business or the football business of colleges, or the business of enforcing the Volstead Act, then there is a certain amount of news value in the details concerning the rapid expansion of the utility business.

"If it is a crime for service companies to try to bring conveniences and increase their sales to the public, their publicity efforts are a serious offense. For my part, however, I don't agree with those propagandists who are endeavoring to impugn the efforts of such companies to interest the public in their business, for, as a matter of fact, their business is the public's business after all, as the public holds the stock in their organizations."

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Of course, what most aroused the ire of the politicians against the utility—or, rather, the electric power—organizations was the latter's campaign against government ownership of power projects. The appropriation of rate-payers' money to carry on publicity work would have brought no protest had the publicity not been directed against government ownership.

On the other hand, there are statesmen drawing public salaries who spend considerable of their time working for government ownership. Just why the utilities, which do not believe in government ownership, should not have the same right is difficult to understand; probably because it all depends on whose ox is gored.

COMING CONVENTIONS.

Tri-State Telephone Convention, Erie, Pa., Lawrence Hotel, August 8, 9 and 10.

United States Independent Telephone Association, Chicago, Hotel Sherman, October 16, 17, 18 and 19.

Independent Pioneer Telephone Association of the United States, Chicago, Hotel Sherman, October 18.

The Storage Battery in Telephone Work

Three Fundamentals of Telephone System Are Switching, Signaling and Transmission—Dialing Equipment Given Rise to New Power Plant Conditions—Use and Theory of Storage Battery—Various Methods of Operating Batteries Today

By Theodore A. Adle,

Engineering Assistant, Bell Telephone Co. of Pa.

The three fundamentals of a telephone communication system are transmission, signaling and switching. The central office power plant is closely related to each of these, for without adequate provision for supplying electrical energy, switching, signaling and transmission are not effectively accomplished.

The wide use of dialing equipment, which requires from two to three times as much power as manual equipment, coupled with the greater concentration of such equipment in large buildings, has given rise to many new and interesting power plant conditions.

Storage batteries, together with their associated equipment, are furnished primarily for supplying current to operate central office equipment, and for damping the fluctuating high-frequency voice and generator currents, which would otherwise seriously interfere with transmission. They also serve as a means for storing energy for reserve use in case of an emergency, due to the failure of the outside power service, or to local trouble such as the breaking down of a charging generator. In either case, they are supplemented by the charging machine equipment.

Storage batteries in telephone work consist of a number of individual cells connected together electrically in series. The individual storage cell used for telephone purposes is known, in general, as the lead-lead sulphuric acid type. Each cell of this type consists of:

(a) Either a blown glass jar, a hard rubber jar, or a lead-lined wooden tank.

(b) A set of positive plates of peroxide of lead carried on a lead alloy framework. This peroxide of lead is called the active material. The positive plates are connected together by a common lead strap or bus bar, and collectively make up the positive elements.

(c) A set of negative plates of pure metallic lead in a spongy form, also carried on a lead alloy framework. The negative plates are also connected together by a common lead strap or bus bar, and collectively make up the negative element.

(d) Electrolyte or battery solution. This is a solution composed of approximately one part of pure sulphuric acid and four parts of pure water.

(e) Wooden separators between the positive and negative plates.

A storage battery does not store up electricity; it stores only chemical energy. In charging, electrical energy is changed into chemical energy and stored in the battery. In discharging, this chemical energy is changed again into electrical energy. There are, of course, losses in both changes which prevent 100 per cent efficiency, because the voltage supplied on charge must be higher than that supplied by the battery discharge at the same current rate, since, in each case the internal resistance of the cells must be overcome.

Theory of the Battery.

When a storage battery is first set up, the sulphuric acid, ordinarily at 1.210 specific gravity, enters at once into combination with a portion of the active material of the plates, forming lead sulphate, which remains in place on both the positive and negative plates in finely divided form. This absorption of acid into the plates is shown by the rapid drop in the specific gravity of the electrolyte as soon as it is poured into the cells.

The initial charge, which is immediately started, is for the purpose of reconverting this sulphate into sulphuric acid in solution, metallic lead on the negative plates, and lead peroxide on the positive plates.

When a storage battery is discharging, an electrical current is produced by the sulphuric acid in the electrolyte going into the porous parts of the plates and combining with the metallic lead of the negative plate and with the peroxide of lead of the positive plate, to form lead sulphate. This lead sulphate remains in a finely-divided form on both the positive and negative plates, and is invisible, except for the change produced in the color of the active material.

As the discharge progresses, the electrolyte becomes weaker by the amount of acid that is absorbed in the plates, producing electric current and incidentally producing the compound of acid and lead called sulphate. This form of lead sulphate is harmless, and is a necessary factor in the operation of the battery. The loss, from the solution, of the sulphuric acid necessary for the formation of the lead sulphate, causes the lowering of the specific gravity of the electrolyte that is noticed during discharge.

When a battery is put in charge, a direct current is passed through the cells in a direction opposite to that of discharge. This current passing through the cells in the reverse direction will reverse the action which took place in the cells during discharge.

The lead sulphate on the positive plates is changed to lead peroxide and sulphuric acid. In the same manner, the lead sulphate on the negative plates is changed to metallic lead and sulphuric acid. The release of the sulphuric acid from both the positive and negative plates allows it to mix again with the electrolyte and raises its specific gravity.

During charge, the electrolyte gradually becomes stronger—that is, its specific gravity increases—until practically all the sulphuric acid is returned to the electrolyte. At the end of the charge the electrolyte will be practically of the same strength as before discharge, and the same acid will be ready for use over again during the next discharge of the battery.

Under normal operating conditions, there is very little loss of acid; hence, it is added to the electrolyte very infrequently, at intervals of about four years. There is, however, evaporation of water from the cells, and this loss is periodically replaced to prevent damage to the plates caused by exposure to the air. Only distilled water, or water known to be free of iron in solution or chemicals, is used to replace evaporation.

During the discharge of the battery, and particularly toward the end of the discharge, there is always a tendency for a portion of the lead sulphate to assume a hard, white, crystalline form. This hard form of sulphate is the harmful variety, since as this sulphate continues to increase in quantity and bulk, it fills the pores of the plates and retards the free circulation of acid into the plates. This action tends to cut out of service large portions of the plates (particularly the negative) by covering them with an insulating coating (it being a non-conductor) and also by crystallizing within the buttons and between the buttons and the supporting lead framework, buckling the plates and crumbling off the active material.

The sulphating which takes place during the regular discharge of a storage battery is entirely normal. However, in order to avoid an abnormal condition of the battery, commonly referred to as "sulphated," the harmful sulphate, mentioned in the previous paragraph, when not in too large masses, can be converted, by overcharging, into lead and lead peroxide in the same manner as the finely-divided useful variety.

The regular conditioning charges that are specified for all batteries are given for the purpose of completely decomposing any such crystals that start to form, before they become large enough to do any damage. Excessive charging is, however, very harmful owing to the action of the oxygen gas, in combining with the lead of the buttons, and the supporting framework of the positive plates, forming too much peroxide of lead, which occupying more space than the lead of which it was formed, buckles and eventually cracks the positive plates.

Variation of Specific Gravity.

The specific gravity of the electrolyte falls very closely in direct proportion to the ampere hours discharged, and, therefore, is the best guide in following the discharge.

The total drop in specific gravity for a complete discharge varies for different types and sizes of cells, depending on the relative bulk of the plates and electrolyte. As the small size cells of any type have a relatively large bulk of electrolyte, they, therefore, have a smaller range than the large size cells of the same type. If the cells have less than the full number of plates, the range in specific gravity is proportionally reduced, except in the case of the pilot cell, which should be equipped with a device known as a displacement block or tank for displacing the excess electrolyte.

When the cells are in poor condition, badly sulphated or a large portion of the active materials in the plates has been lost through improper handling, the range in the specific gravity between full charge and complete discharge is much reduced.

The available capacity of a storage battery is temporarily reduced at low temperatures. With a return of the normal temperature, the capacity is regained.

After the completion of a charge, particularly an overcharge, the specific gravity of the electrolyte will rise slightly, due to the passing off of the gas bubbles formed during the charge.

Formation of Gas.

When a cell is being charged, the electrical energy expended upon the battery brings about a chemical change in the plates as previously explained. Not all of the energy applied, however, is used in forming the active materials. Some of the energy is lost in the formation of free oxygen gas on the position electrodes, and free hydrogen gas on the negative electrodes. This gas appears as bubbles on the sides of the plates from which it escapes, rises to the surface of the solution and is lost in the air.

At the beginning of the charge of a fairly well discharged battery, it will be noted that very little gas is formed. As the charging continues, the gas will come off more and more freely, since the battery can no longer utilize current at the same rate. This gassing will continue until the battery is fully charged, when the quantity of gas emitted will cause a violent boiling of the solution.

This gassing is of great importance, since, aside from the ammeter readings, it serves as an indication that the charging rate should be reduced. At this stage, very little of the electrical energy applied is absorbed to form active material on the plates. On account of this wasting of energy in the formation of gas, as the battery approaches its charged condition, it is advisable not to charge batteries every time up to their maximum capacity.

Formation of Sediment.

Besides wasting energy, the formation of gas in quantities, such as to produce violent boiling of the electrolyte, results in washing out from the plates particles of the active material. This material, in time, accumulates in large quantities in the bottom of the cells, forming what is known as sediment. Some of the injurious sulphate which is occasionally removed by the con-

ditioning charges, previously mentioned, also settles in the bottom of the cells as sediment. The formation is, therefore, unavoidable, and must be expected to a moderate degree.

This sediment is a conductor to a certain extent and must, therefore, not be allowed to become so deep that it comes in contact with the bottoms of the plates, as it will short circuit them.

Rating of Batteries.

The voltage of a storage battery is equal to the number of cells connected in series, multiplied by two.

The voltage of a battery is affected by the rate of charging and discharging, and for this reason cannot be used to indicate the state of charge or discharge without taking the rate into consideration. The voltage of a single cell is a little above two volts during charge, and less during discharge.

The following table gives the average cell voltage at different discharging rates to which it is considered safe to allow a cell to drop, and yet insure a reserve in case of emergency.

Discharging rate.	Voltage per cell.
Normal	1.90
¾ of normal	1.92
½ of normal	1.94
¼ of normal	1.96
1/10 of normal	1.97

While the voltage method is usually the most convenient, a fall in specific gravity is the most reliable for determining the condition of discharge of the battery and should be used unless extraordinary conditions prevent.

Ampere-Hour Capacity.

A storage battery that is charged is capable of delivering a given amount of current for a given time, the discharging continuing until all the active material has been converted to lead sulphate. The product of the amperes and the time they are being delivered is a measure of the capacity of the battery, and is known as the ampere-hour capacity. For example, if a battery is capable of delivering 80 amperes for 8 hours, it is said to have a normal capacity of 80×8, or 640 ampere-hours.

The ampere-hour capacity of a battery is affected by the rate of discharge. In general, the higher the discharge rate, the less capacity. The lowering of the specific gravity during discharge is in direct proportion to the ampere-hours delivered.

It is the custom of the manufacturers of storage batteries to set a normal charging rate in amperes for each battery. This rate is the rate that would completely discharge a fully-charged battery in eight hours. To bring a battery from a state of complete discharge to a state of complete charge will, due to battery losses, require charging at the normal rate for a longer period than eight hours.

Although the manufacturers generally recommend that their batteries be charged at the specified normal rate, experience with storage batteries in telephone service indicates that a decided advantage can often be gained by charging storage batteries at a rate lower than normal.

Operating Routines.

In order to fully charge a battery after full or partial discharge, it is necessary to pass through the cells an amount of current equal, in ampere-hours, to that taken out on discharge, plus some excess, to make up for losses.

Under present-day telephone requirements, there are several accepted methods of operating storage batteries, namely, by either the continuous or full float method, the alternate charge and discharge method, or the constant voltage or potential method. The alternate charge and discharge method and the constant voltage method may each be further classified as partial float methods.

While the foregoing respective charging methods each have their specific application in the sphere of telephone operating practice, dependent upon type of operating equipment, size of maintenance force, and service requirements, it should be borne in mind that all of these methods include, to some extent, characteristics of one another.

The first cost and annual charges of a central office power plant may vary within wide limits, depending on the choice of a suitable battery operating routine. The continuous float method of operation, by means of which the office load is carried continuously by the generators with the batteries standing by for emergency, has been instrumental in lowering the cost of large power plants.

In cases of this kind, since the batteries are not subjected to a charge and discharge cycle, their deterioration is greatly retarded, and it is possible to defer replacements and additions for considerably longer periods. The full or continuous float method of operation, however, is principally applicable to dial system offices, or manual offices where duplicate sets of batteries and 24-hour supervision of the power plant is available.

Another item of interest in connection with the operation of batteries is the constant voltage charge method, which is used in connection with manual offices where closer voltage regulation is required than is obtained with the usual charging method, sometimes referred to as the "constant current" method.

This method consists of maintaining the battery at a predetermined voltage during a large part of the day, by means of occasional adjustments of the generator output. The voltage selected is of such value that the drain of the previous discharge will be replaced and sufficient additional charge will be given to keep the battery in good condition without periodic overcharges.

The constant voltage charge method has several advantages other than the smaller voltage range of the battery, such as less gassing and longer life.

The alternate charge and discharge method, the least desirable from both a service and economical standpoint, consists of floating the central office load and charging the batteries with the charging generators, and then allowing the batteries to discharge by carrying the central office load during the period of light traffic, or the period when the office is unattended.

Floating refers to that method of operating a battery where the applied voltage at the battery terminals is adjusted to allow the central office load to be carried by the generator and a small charging current to enter the battery. In this method, the transformation losses in the battery are avoided and the wear on the plates is reduced. At the voltages used and with the batteries fully charged, the current floated into the battery should be within 1 or 2 per cent of the normal 8-hour rate.

When a battery is operated on a continuous floating routine, the following readings are taken at regular intervals:

1. Specific gravity, temperature and voltage of the pilot cell daily.

2. Specific gravity, temperature and voltage of all cells weekly, on the same day of the week.

It may be stated here that one of the cells of a storage battery is used as a guide in the operation of the battery as a whole. For this purpose, a readily accessible and well-lighted cell is selected and known as the "pilot" cell. Temperature and hydrometer readings are taken on this cell with sufficient frequency to indicate its state of charge and discharge, and thus serve as a guide in the operation of the battery as a whole. The pilot cell, when once selected, is not changed, unless the cell is to undergo special treatment or repairs.

The constant voltage method of charging a storage battery consists of maintaining the battery at a constant potential during the day by floating the central office load with charging generators at a potential that will replace any battery capacity lost during the night, resulting from the charging source being shut down. The efficiency of the battery is considerably increased where this method is used, as compared with the alternate charge and discharge method; also considerable saving is effected because no periodic conditioning charges are required.

Under the constant voltage method of operation, the storage battery is placed on charge in the same manner as with the constant current method, except that the initial charging rate may be considerably higher than the normal rate of the battery, in general being limited only by the available charging generator capacity. A charging rate of approximately 1½ times the normal 8-hour rate is generally maintained under this method.

Under the alternate charge and discharge method, it is important that the battery be given the proper amount of charge, but excessive charging must be avoided, as not

only will an unnecessarily rapid accumulation of sediment and excessive evaporation of the electrolyte result, but, what is more important, the life of the battery plates will be very much shortened.

Under this method, the best practice, from the standpoint of power economy, life of the battery and provision for emergency reserve, embraces what is known as a "regular charge" to be given when the battery is from one-third to one-half discharged, and an "overcharge," to be given weekly if it is necessary to charge the battery daily, or once every two weeks if the regular charge is not given so often.

Conditioning charges are given storage batteries operated under the floating method, at periodic intervals, for the purpose of checking the condition of a battery.

Inspection and Troubles.

The successful operation of a battery defends upon a number of conditions. Any troubles, eliminating minor mechanical difficulties, are usually traceable to impurities in the electrolyte, short circuits between plates, or leaky cells. If a battery does not operate satisfactorily, be sure what is wrong before applying the remedy.

The inspections that are of the most importance are those to determine:

(a) If the battery is being maintained in accordance with the specific operating instructions for the particular battery involved.

(b) If there are any evidences of impurities in the electrolyte.

(c) The depth of sediment in the cells.

(d) If any plates are broken.

(e) If the separators are in good condition.

(f) That there are no leaky containers.

(g) That all terminals, wiring, bus bars, etc., are free of corrosion.

(h) That the battery room or battery cabinet is properly ventilated, as well as neat and clean.

The tests that are of primary importance are those to determine:

(a) The capacity of the battery at certain rates of discharge.

(b) The purity of the electrolyte.

(c) The voltage characteristics.

When there are evidences of impurities in the electrolyte, a sample should be taken from the cells for analysis.

The depth of sediment in the bottom of cells should be watched carefully, since if it is allowed to accumulate until it touches the bottom of the plates, the cell will be short-circuited, and rapid deterioration will occur.

There should be at least one-half inch clearance between the bottom of the plates and the top of the sediment.

Cleanliness in and about battery cabinets and particularly in battery rooms is imperative. Corrosion of any exposed metal parts of a storage battery, such as terminals, wiring, bus bars, etc., and which in general is due to the acid-laden moisture associated with the operation of storage batteries, is, to a great extent, prevented by protective coatings of acid-resisting paint or oil. Corrosion or coatings of acid-laden moisture, however, may be removed by washing the affected parts with a saturated sclution of bicarbonate of soda in water, and then rinsing with clean water.

A saturated solution of bicarbonate of soda (not washing soda, which is carbonate of soda) is the best agent for neutralizing acid. The washing solution must not be allowed to get into the battery cells.

Corroded terminals often prevent a battery from delivering current properly to the connected load. This is because the products of the corrosion are non-conducting substances which form a layer between the terminal of the battery and the terminal lug connector which may be connected to it. This film will not ordinarily interfere with the charging of the battery or its use for other purposes than supplying talking current, but it will develop a point of high resistance, thereby causing the circuit to be noisy. The obvious remedy is to clean the corroded portion affected.

Battery rooms and battery cabinets should be properly ventilated, not only to insure dryness and a moderate temperature, but to prevent any chance of an explosion, as gases given off during the charging of a battery form an explosive mixture, if confined. During the periods of normal operation of storage batteries, nothing should be stored in battery rooms or battery cabinets that is not a part of the regular battery equipment.

Fine Program Scheduled for Tri-State Convention.

Plans for the Tri-State Telephone convention, which is to be held at the Lawrence Hotel, Erie, Pa., Wednesday, Thursday and Friday, August, 8, 9 and 10, are now complete, and the program announced contains addresses of a varied nature which will be sure to be of interest and benefit to telephone people. August 8 will be New York day, and J. G. Ihmsen will be chairman; August 9 will be Pennsylvania day, with H. E. Bradley chairman and August 10, Ohio day, when Frank L. McKinney will be chairman.

The program in full is as follows:

WEDNESDAY, AUGUST 8, NEW YORK DAY.

J. G. Ihmsen, president and general manager, Up-State Telephone Association of New York, chairman.

12:00 p. m.—Luncheon and joint conference.

"Information Service," by E. B. Russell.

"Radio in Relation to Telephony," by Ray H. Manson, chief engineer, Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.

"The Importance of Publicity in Telephony," by Stanley R. Edwards, editor, TELEPHONY.

"Properly-Designed Telephone Buildings," by Howard Jones.

Adjournment at 2:30 p. m.

THURSDAY, AUGUST 9, 10:00 A. M., PENNSYLVANIA DAY.

H. E. Bradley, president, Pennsylvania State Telephone & Traffic Association, chairman.

"Commercial Division of the United States Independent Telephone Association," by R. F. Wilder, commercial superintendent, Tri-State Telephone & Telegraph Co., St. Paul, Minn.

"Budgets for Telephone Companies," by F. J. Chesterman, vice-president and general manager, Bell Telephone Co. of Pa., Pittsburgh.

"Public Utility Law," by Chas. H. English.

"Valuations for Rate Cases," by Henry Baldwin.

"Telephone Financing," by R. F. DeVoe, president, R. F. DeVoe & Co., New York City.

FRIDAY, AUGUST 10, 10 A. M., OHIO DAY.

Frank L. McKinney, secretary-treasurer, Ohio Independent Telephone Association, chairman.

"Employe and Subscriber Relations," by J. F. Carroll, Jr., general manager, northeastern area, Ohio Bell Telephone Co., Cleveland.

"Just Minding Our Own Business," by J. Warren Safford, president and manager, Troy Telephone Co., Troy, Ohio.

"Joint Poles and Relation to Power Companies," D. E. Lowell.

"Public Relations," by W. S. Vivian, of Chicago, director of public relations, Middle West Utilities Co.

Adjournment at 1:00 p. m.

Traffic Conference Program.

AUGUST 9, 10:00 A. M.

H. F. Gingenbach, chairman.

"Voice Technique."

"Public Relations from the Switchboard."

"Operators' Health."

"Connecting Company Relations."

"Recreation."

Adjournment at 1:00 p. m.

AUGUST 10, 10:00 A. M.

"Information Service."

"Traffic Force Studies."

"Literature for Operators."

"Central Office Instructions."

"Hygiene."

Adjournment at 1:00 p. m.

Reduced Rates on Air Mail Are Effective August 1.

It will cost only one-quarter as much to send the average business or social letter by air mail on and after August 1 as it does now, for on that date the rate will be reduced from 10 cents a half ounce to 5 cents for the first ounce or fraction and 10 cents for each succeeding ounce or fraction.

This means that an ordinary letter may be sent anywhere in this country for 5 cents and that an air mail package which now requires $2 postage may then be sent to any part of the country for $1.05.

The Soliloquy of a Switchboard Plug

Here Are Various Answers to the Question, "What Does a Switchboard Plug Think About?"—Discussion Presented by Assemblage of Plugs at Traffic Conference of Iowa Independent Telephone Association's Annual Convention

By Miss Nelle Roberts,
Assistant Secretary, Central Mutual Telephone Co., Rockwell City, Iowa

I HAVE just been turning over in my mind the evidence gained by long years of experience as a plug at the switchboard in a local telephone office.

When the night is the darkest; when the zero hour is reached in the telephone office; and when all are wrapped in slumber, with the exception of those who are compelled to be up, we plugs have a little time to discuss the different features of the telephone business and the part we take.

We hold a very peculiar and significant place in the work of the switchboard. We hear all that goes on through the switchboard between our company and the public; and all that happens in the room among the employes.

During our discussions, we took up the subject, "What are the greatest features requisite to good telephone service?" You know we hear so much about service in our work these days.

In order to get the points presented in these discussions, I will just picture to you to the best of my ability the points brought out by each plug by bringing them before you in person and letting them give you their own arguments and then we will be in a position to judge this matter.

First, I shall call—Speed.

* * *

"I THINK I am the feature of the telephone business of the most importance. Everything should be set aside for speed. Speed is the most attractive feature of service. It is acquired by practice, exercising care.

Speed is the quiet easy execution of each operation without loss of time, and with the least possible expenditure of energy. I am convinced that speed is the most essential feature of telephone operating.

I have been so exasperated by slowness in service, the lack of attention to ring-offs, slow monitoring, that I have been driven to desperation. My mind is centered on—Speed."

* * *

"WHAT if you do excel in speed if you put up the wrong connection? I contend that Accuracy is the most essential feature of good telephone service.

Accuracy is gained by giving attention to details in ringing, putting up connections, being attentive, speaking distinctly and giving the best of attention to supervisory signals.

Think of the grief caused if you break one of these rules, and how irritated our customers become, and what a disturbing factor we are to good service if we lack Accuracy.

Much general dissatisfaction is caused if we are careless in our work and lack Accuracy."

* * *

"MY contention is that one can make more friends through courtesy; do better business and it will be more effective through courtesy than with any other feature. As much depends on courtesy as on the service rendered.

While I am making a reputation for myself, I am also making a reputation for my company. Think of the losses of friends I can make for the company, if I am not courteous. How soon the customers forget any little kindness or courtesy shown if I miss being courteous once, by speaking abruptly or thoughtlessly.

Conversation over the telephone does not sound the same as when face to face. Our expressions cannot be seen, so we must put it into our voice; and it behooves us to be nicer over the telephone, because our customers cannot see us."

* * *

SECRECY: "I contend that secrecy of conversation is the great essential of telephone business; and it is of far greater importance than any feature yet mentioned.

You see, we hear all that goes on over the switchboard; and there is a great temptation to tell and discuss what we hear, but you know it is very essential that we say nothing about it.

What a lot of grief we can cause by telling what goes on through the switchboard. Why, I could ruin friendships, wreck homes and could disrupt the whole town if I would tell what I know, see and hear.

And yet, how happy we can make customers if we do their work secretively. I have chosen three mottoes. They are: 'See Nothing,' 'Hear Nothing,' 'Say Nothing.'"

* * *

COOPERATION: "I consider my argument bears great weight when it comes to considering essential features of telephone business," Cooperation disclaimed.

"Telephone work is of much detail and is so dove-tailed that every part must work smoothly with every other part, like well-oiled machinery.

I see that the traffic department works with the commercial by making tickets correctly and reports promptly. I see that the traffic works smoothly with the plant department to the end that our equipment is kept in perfect order, and I see that all telephone departments work with the general public.

Our work is so interlaced that I could cause a lot of friction if I do not work in harmony with all departments, and if there is not cooperation in one little detail, the whole organization is considered at fault. From all that I can learn in our office, Cooperation is the great essential; and I know I have a lot of followers in exchanges all over the country."

* * *

CLEANLINESS and Orderliness: "It is my endeavor to have everything clean and orderly in my office. I want employes, when they come into my office, to see a place for everything and to put everything in its place. Then when customers come in, they may see everything in its place: and when they leave, they will have a good impression of the office.

Some little errors in other parts of the service that may crop out, might be excused because of the appearance of our office. If customers come in and find it in disorder and find that we are careless, they will have the right to think our work is done in a slip-shod manner.

My motto is 'Cleanliness is next to godliness' and 'Order is Heaven's first law.'"

* * *

"WELL," says Deportment, "how do you like it when everything in the office is upset and disorganized by the whole gang of employes having a good time at the expense of the company?

"We have no regard for customers who may be in our office. How do you like to see us come in with a swagger? How do you like to have us ignore customers?

Oh, sometimes, if a customer is persistent enough, he can get our attention after we have settled the matters of the night before and made our social engagements for the next day.

What do customers think when they leave? Who gets the blame for poor service and why?

I think it is Deportment. I like to see that things are put in an orderly condition and to see that there is perfect deportment; and that customers get the best of attention, and that their desires are attended to first; in other words, Deportment plays a great part in the telephone business."

* * *

HEALTH: "Now, how do you like to have me come whining around with this cold in my head, with a crimp in my digestion, or a pain in my anatomy? How do you like to have me in condition not to be able to take my place at work? How do you like to have me upset your schedules by not being able to do my work?

I am a disturbing factor, and am leaning on someone else to carry my burden. I can simply disrupt an otherwise peaceful and quiet organization by my lack of Health.

As a very essential feature of telephone organization, I think I am a very useful factor. Health! There is nothing like it; there is no greater loss when it is gone.

Think how useful we can be by being healthy; What endurance records we can make. I claim that one of the most valuable assets is Good Health."

* * *

JUDGE: "You have had pass in review before you the elements of good telephone service. You have heard each plug contend for the laurel wreath. You have heard from Speed, Accuracy, Courtesy, Secrecy, Cooperation, Cleanliness and Orderliness, Deportment and Health.

The telephone service is a place where not one alone can win the race, but must be a combination of all the essentials requisite to Service.

My verdict is not to choose one of the great essentials, but I render the decision that each office, to be thoroughly equipped for Service, must use plugs of Speed, Accuracy, Courtesy, Secrecy, Cooperation, Cleanliness and Orderliness, Deportment and Good Health—and I crown one and all of you with the crown of Victory. This ruling becomes effective immediately."

Traffic Aims for the Year of Pacific Bell Company.

The traffic aims of the Pacific Telephone & Telegraph Co. for this year have been set forth on large poster cards addressed to the long distance and local operating employes of the company. The message to the long distance operating employes of the Northern California and Nevada area as given in The Pacific Telephone Magazine follows:

"During the year 1927 toll service in the Northern California and Nevada area, from every viewpoint, was greatly improved over any previous performance. The speed of service and various technical features were particularly improved, due largely to the introduction and general adoption of the combined line and recording operating method.

The toll employes are to be congratulated for the important part they played in the successful introduction of this new method and for the other important accomplishments of the year.

Looking to the future, it appears that the most likely opportunity for further progress lies in improving what might be termed the general tone of handling contacts with customers and other employes. By 'tone' is meant not only the tone of the voice, but everything else that goes to make dealings pleasant both to customers and to other employees of the company with whom you come in contact. The following features are of particular importance:

(a). Operating that is unhurried and attentive, marked by a willingness to listen.
(b). A pleasing voice, which is of prime importance.
(c). Obliging and intelligent explanations, when an explanation is desired or seems in order
(d). A general disposition to be helpful and pleasant.

"Accordingly, we suggest that an improvement in the 'tone' of toll operating be made the main aim for the immediate future. This aim can be accomplished only by every toll operating employe entering into the spirit of the program; and the cooperation of each employe in making this program a success is earnestly solicited.

It is indeed gratifying to observe that whenever the long distance operating employes have been given a helpful suggestion, they have been quick to act upon the suggestion, a fact that largely accounts for the improvement in toll service, and we know that you will quickly secure the results in this important undertaking."

Addressing the local operating force, the statement says:

"The safety, comfort, and happiness of the people of this community depend to a considerable extent on the service which you are giving.

Each year this dependence on our service increases and the service given has improved from year to year in a manner most gratifying.

You are proud of your service and proud of your ability to fulfill the requirements of the community. In order to continue to justify the friendliness and trust which you have earned in this city, it is suggested that the aim for this year be outlined:

1. To produce a service free from interruptions and imperfections.
2. To improve the general tone of telephone operating so that a customer who is depending upon our service for social or business contacts, will feel that his call is in the hands of an interested and resourceful business woman.
3. So to conduct the work that the greatest possible number of calls will result in conversations instead of "don't answer," "busy," "out of order" reports, or in being abandoned by the calling party.
4. To express in tone of voice on every call a real desire to be of service.

It is believed that with the accomplishment of our aim, the work will become even more pleasant than in the past.

It is the work of each individual that will make it possible for our company to fulfill its obligations to the people of this city and justify the trust that they are placing in us."

Tests of Long Distance Lines Made Every Day in Year.

Long distance telephone lines from Maine to California and from Duluth to Key West are tested every day in the year. Between five and six o'clock in the morning, before the average man has begun to think about the problems of the day, and while the lines are least busy, each district office makes a test of the long distance lines within its territory.

The object of this test is to determine if the main lines of wires are ready for the day's work and everything in perfect order for the heavy load that will soon come humming along.

When the general plant manager of the American Telephone & Telegraph Co. reaches his office at headquarters in New York City, he is informed at once of the condition of the long distance wires all over the country.

Here and There in Telephone Work

New Telephone System Speeds New York Stock Deals.

New facilities of the New York Stock Exchange designed to enable brokers to keep their customers advised of the fluctuations in bid and asked quotations on the floor have just been placed in operation. An elaborate telephone system with a central office located under the trading floor and with connections to each trading post and each booth on the floor has been established.

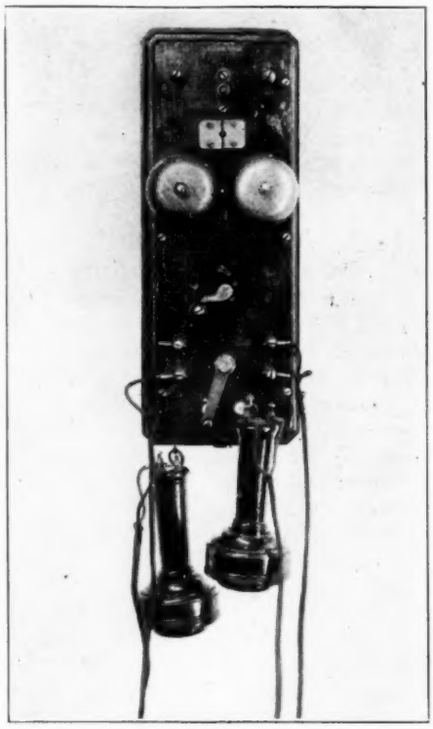
All telephone calls from member firms are taken by the clerk at whatever booth received and the inquiry sent to the central bureau. From there the inquiry is made to whatever post at which the stock is traded. A clerk is located at each post, and inasmuch as he hears the trades made and sees the changes made in the bid and asked quotations, he is able to furnish immediate replies to the central bureau.

It is thought that through this method, Wall Street can be kept informed accurately of all fluctuations and irrespective of how late the tape may be, a trader will be able to place his orders at the market without fear of getting a price far removed from what he expects. Aside from his advantage, one of the chief reasons for the change is to save the time of the overworked brokers, who have all they can do to handle orders without being bothered with bid and asked quotations for their customers.

Chicago Has Had Telephone Service for 50 Years.

The 50th anniversary of Bell telephone service in Chicago was observed on June 26. The first Bell central office in Chicago was located on the top floor of the buildings at 125 La Salle street (old number), now 17 North La Salle street opposite the Hotel La Salle. The business office was in the basement.

Service opened June 26, with 75 telephones. The first operators were boys. The telephone instrument at that time was a clumsy affair with two telephones similar to the present receiver connected to it with cords. The user talked into one and listened with the other.



Telephone Instrument Used in Chicago in 1878. One of Receiver-Shaped Instruments Was Used for Listening and the Other to Talk Into, the Subscriber Operating the Switch to Change from One to the Other.

The Bell company of Illinois was organized in December, 1878, and in January, 1879, Bernard E. Sunny, now chairman of the board of the Illinois Bell Telephone Co., became superintendent. The Chicago Telephone Co., now the Illinois Bell, was incorporated in 1881. Several officials of the present Illinois Bell started in those early days, some as boy operators. Among these are W. J. Boyd, treasurer, and W. G. Luscombe, assistant treasurer.

In its first 50 years in Chicago, the telephone has grown from one central office with 75 telephones to 99 central office switchboards and 914,000 telephones. It is expected that one million will be in service by 1930. The company has 21,000 employes in Chicago, of whom about 12,000 are young women operators.

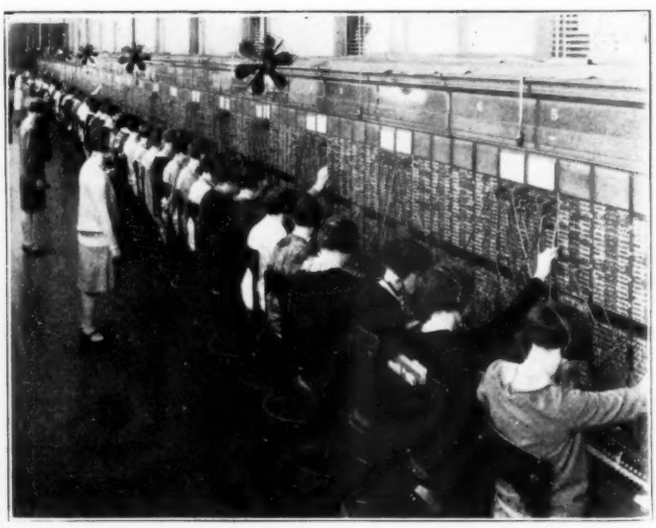
A few miles was the limit of telephone transmission in 1878, but now not only the entire United States, but Canada, Mexico, Cuba, and a large part of Europe are within telephone reach of Chicago. In 1878 telephone wires were carried over the tops of buildings. Today, the company has more than 4,000,000 miles of wire in Chicago, the greater part of which is underground.

Chicago subscribers were mailed handsomely illustrated booklets, "A Gold Anniversary—1878-1928."

Practical Notes For Maintenance Students; Electromagnets.

By John A. Bracken.

In general the most common forms of electromagnets used in telephone practice are to be found in such equipment as relays, magneto switchboard drops, machine-switching apparatus, ringing interrupters, dynamos, motors, circuit-breakers, etc. They are made in a variety of shapes



Interior of Chicago's First Bell Central Office, from Painting by E. G. Drew, Former Secretary of Illinois Bell Telephone Co. Details of the Old Apparatus Are from Contemporary Diagrams and Descriptions.—Modern Chicago Central Office Switchboards. Efficient Young Women Operators Long Ago Replaced the Boisterous Boys of the Very Early Days.

to meet the requirements of the various kinds of equipment employing them in their operation.

If wire is wound in the form of a helix or hollow coil called a solenoid, and an electric current is passed through it, the solenoid will acquire the properties of a magnet and possess similar repelling and attracting qualities. A large number of "rings of magnetic force" will meet in the internal portion of the solenoid; and by inserting a soft-iron rod, technically called a core, the rings of magnetic lines of force will pass through the core, producing an electromagnet.

The presence of the metal core in the coil increases enormously the strength of the magnetic field, since the iron offers a much easier path for the lines of force than does the air. The principal object in using soft iron as the core of an electromagnet is that all the effects of an ordinary steel magnet are produced so long as the electric current is flowing in the coil; but directly the current is stopped, the iron core will at once lose its magnetism.

The softer or more "permeable" the iron core of an electromagnet is, the greater will be the magnetic intensity produced. On the other hand, if the iron is not of the proper degree of softness, it will show magnetic properties even after the magnetizing force of the electric current ceases. Such magnetism is called residual magnetism or remanence. If steel is used for the core, it will become magnetized like iron, but unlike iron it will remain permanently magnetized after the electric current is cut off from the coil.

The amount of magnetism or flux set up in an electromagnet depends considerably on the strength of the electric current and the number of turns of wire. For example, a coil having ten turns of wire with a current of one ampere flowing through it, has the same effect as a coil of 100 turns and a current of one-tenth ampere, or one with 1,000 turns and a current of 1-1000 ampere.

Like results may be obtained by electromagnet coils wound with coarse wire or with fine wire; each kind of wire has its advantage according to the manner in which it is to be used.

The turns of wire are called ampere-turns, and defined as a unit of magnetomotive force, or "driving power" equal to that produced by one ampere flowing around a single turn of wire. The ampere-turns per square inch of magnetic circuit are called magnetizing force.

Important points relative to electromagnets are:

1. Electromagnets having short cores magnetize and demagnetize more rapidly than those with long cores. However, when magnetic strength rather than speed of action is required, long cores are used because the ampere-turns can be increased in number without greatly decreasing their distance from the core when adding a number of layers of wire.

2. It is one of the laws of electromagnetism that, with any given battery current, the greatest magnetic force is obtained when the resistance of the coils of the electromagnet is equal to the resistance of the other parts of the circuit; that is, of the batteries and conducting wires. It is, however, standard practice to wind electromagnet coils used in telephone practice to a definite ohmic resistance regardless of the external resistance of the circuit in which they are to be used.

3. In making an electromagnet to be used in a circuit of very short length, it is necessary to use a comparatively short, thick wire; short, because a small addition would increase the resistance of the circuit out of proportion to the whole; and thick, because the current flowing in the circuit is not greatly reduced by its use, while the number of ampere-turns are sufficient to effect a strong magnetization.

4. Electromagnet coils used in the equipment of long telephone line circuits are generally wound with very fine wire, so that a great many turns can be used. Each turn adds its influence to the combined magnetic effect without exceeding the distance from the core at which it would cease to aid magnetization of the core, while its own (the wire) resistance is yet so small in proportion to the entire circuit that it does not decrease the strength of the magnetizing current to any appreciable extent. Furthermore, winding the coils with fine wire allows the line wires to be small in area and greatly reduces the amount of current required, thus lowering the cost of operation.

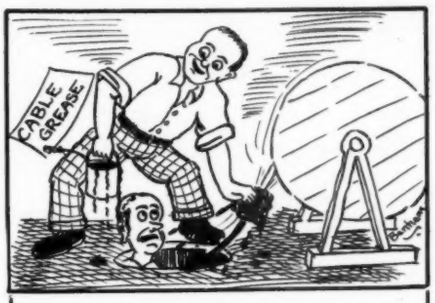
5. Electromagnets of telephone line equipment are usually designated as high resistance; not because it is in virtue of their high resistance that they operate better on long circuits, but simply because they necessarily have a high resistance.

6. Electromagnets generally operate quicker when magnetized by a high voltage than when a low voltage is used.

In any electromagnet, the magnetic field tends to bind closer together, since the electric current is in the same direction through all the turns of wires, and all the turns are parallel.

A polarized electromagnet is a combination of a permanent magnet and an electromagnet. In this type, the entire magnetic circuit is normally under the influence of the permanent magnet alone; and when an electric current is sent through the electromagnet coils, the polarity of their cores, due to the permanent magnet, may be strengthened, partly or wholly neutralized or even reversed, depending on the direction of the magnetizing current.

The polarized electromagnet is extensively used in telegraph equipment, telephone receivers, ringers, galvanometers, voltmeters, ammeter relays, etc.



UNDERGROUND.

By Buck.

The telephone men claim they've found that puttin' cable underground is very much the better way to build their plants. That's what they say!

They seem to think, because it's nice to git away from sleet an' ice, a-stickin' to the open wires, it's better. Say! the big flat-tires believe that they can dig a ditch an' lay their cable, soaked in pitch, an' git away from lotsa grief by doing so. I'd just as lief go jump into the ditch an' shout: "Throw in the dirt wot you took out. If you must hide my plant from view, just bury me in with it, too."

They gotta lotta nerve, by Gosh, to try to hand us that durn josh about the maintenance we'll save by puttin' cable in a grave. I like to see the plant I build. To look at it, my heart is filled with pride, as I point in the air at wire an' cable, hangin' there.

They gotta crust? Well, I should say! I wonder how they git that way! They think expenses they'll cut down by plantin' cable over town. They surely are a sacka nuts. By plantin' cable in them ruts, they'll put a lotta linemen out o' jobs. They're fulla prunes, no doubt.

London and Berlin to Have Picture Transmission by Wire.

Regular exchange of photographs by telegraph and telephone between Berlin and London will be established by September 1, the German Postal Department has announced. Tests made in the past few weeks have proved entirely successful, but constant service will not be attempted until a few slight difficulties still presenting themselves are fully overcome.

The line on which the experiments are being made goes via Hamburg, Frankfurt-on-the-Main and Brussels and is considered the most technically perfect. The size of the photographs to be transmitted is 19 by 10 centimetres and it is expected that on an average of ten pictures can be sent daily.

Exchange of photographs between Berlin and Vienna still remains below expectations, but an improvement is expected.

How Mr. Televox Is Enabled to Talk

The Mechanical Man Designed for Attendance at Remote Controlled Stations of Power Companies Now Able to Talk, Using Set Phrases, When Answering Telephone Calls—Description of Talking Film Mechanism and Its Operation

By R. J. Wensley,

Switchboard Engineer, Westinghouse Electric & Mfg. Co.

In response to a need for a simple and inexpensive form of remote control, a mechanism called the "Televox" or "Mechanical Man" has been developed. This is a machine which answers the telephone and responds to sounds transmitted through the usual audio channels of telephone systems.

All of the earlier models have used an

"Larynx" of Mr. Televox Being Inspected by His Inventor. "Vocal Cord" Is Nothing but a Movie Film of Voice Oscillations.

answering signal consisting of a buzzer mounted in front of the telephone transmitter, this buzzer sounding various codes to denote the response of the devices. Owing to the possibility of errors in calling, there are times when outside persons might call the telephone equipped with the televox in error. Should such be the case with the existing equipment, there would be nothing but a meaningless buzz to tell them of their mistake.

In order to make the equipment more suitable for use over the public telephone system, the Televox has been given a voice with which it responds in the English language or any other language that may be desired.

The previous models were not able to originate a call should something unusual happen in the substation. With the new model, however, should a circuit breaker trip automatically, or a machine overheat, or any of the various protective devices function, the machine is automatically started, and the voice of the mechanism speaks to the telephone operator, giving her the number of the dispatcher's telephone—thus putting through a call in the usual manner.

To give the mechanism means for emitting articulate speech of good quality, use is made of developments in the "talking movie" industry. A piece of moving picture film about 15 or 20 feet long is spliced to make an endless loop. In the present model two sentences are spoken. These are photographed near the two edges of the standard film, the rest of it being left blank. The sound appears in the form of closely-spaced lines of various shades and widths and frequency. Individual lamps with special straight filament are arranged with lenses to concentrate the light on a very narrow portion of the film at any one time.

A small motor drives the film whenever the voice is required. A selecting mechanism in the televox lights either one of the two lamps depending upon the sentence desired. The image of the filament is projected through a narrow slot.

A photo-cell passes current directly in proportion to the amount of light falling on it. As the lines on the film pass in front of the light, the corresponding change of currents which takes place in the photo-cell are amplified through a special shielded three-stage amplifier to a volume sufficient to operate a small loudspeaker. This speaker is placed in front of the telephone transmitter and is heard by the person at the other end of the telephone line exactly as though a human being were speaking the words into the transmitter.

When a call is put through to a substation equipped with a televox having this voice attachment, the person at the remote end will hear a voice saying: "Televox speaking at Randolph 6400." This will repeat a second time, and if the proper signal is not given by means of whistle or other musical devices, the televox will then hang up the receiver upon the assumption that the call which was placed is a wrong number call.

In the meantime the person at the distant end has heard the number of the telephone to which he has been connected and, should it be a wrong number, will be able to hang up and signal the operator again to get the correct number. However, should the dispatcher have made this call with the expectation of operating something in the substation, he listens for the voice; and as soon as he has verified the correctness of the number of the substation, as indicated by the telephone number, he blows a blast on the proper whistle. The voice ceases, and the machine is then in condition for further operation by means of the whistle notes.

Should a circuit breaker open automatically, the televox is put into action and lifts the receiver of the telephone and immediately begins saying at intervals: "This is the Televox calling for Main 5000." This will be continued at intervals until the central office operator is able to complete the connection to the dispatcher's telephone. As soon as he hears this voice, he will stop it by a blast of the proper whistle and proceed to question the machine by further whistles as to what has happened. The answers to these questions will be in the buzzer code which the dispatcher understands.

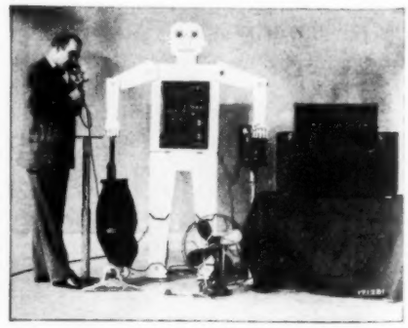
As soon as the whistle stops the voice, the motor is also stopped and the lamps extinguished so that the film is in use only a very short time.

The addition of this automatic voice considerably broadens the possible field of application for the televox. It is not limited to the speaking of the two sentences but may be made to answer quite a number of questions correctly, provided that the necessity for such answers has been determined in advance.

For instance, where it is not desired to use code signals indicating the amount of water in the reservoir, this mechanism can be made to state the height of water in feet, or it can be made to say that machine is cool or a machine is hot, or a machine dangerously hot. It can be made to repeat any sort of routine report that can be selected by electrical circuits.

In order that the exact method by which this operates may be better understood, the following parallel is drawn between ordinary manual operation of the station in time of trouble and operation by means of the new televox.

In a station where there is an attendant, let us assume that when a circuit breaker



Mr. Wensley Speaks With Mr. Televox, Who Responds in a Smooth, Well-Articulated Voice. His "Larynx" Is Contained in the Box at the Right.

opens automatically, an alarm bell rings. The attendant promptly steps to the telephone and calls the dispatcher. In this case, the connection between the opening of the breaker and the telephone call has been by means of the sound emitted by the alarm bell functioning through the ears and brain

of the substation operator. When the dispatcher has answered the telephone, the operator reports and receives his order with regard to the closing of the circuit breaker. He closes the breaker as ordered and reports on its further functioning.

In a station equipped with a new televox, the auxiliary switch on the circuit breaker which rings a bell in the previous case is now connected directly to a special alarm circuit in the televox. This circuit sets up a combination of relays which energizes the solenoid, lifting the telephone receiver from the hook and also starts the film-driving motor, thus passing the film through the aperture plat and at the same time the lamp is lit opposite the proper strip of sound record.

The loudspeaker then says: "Televox calling for Atlantic 9000." This is repeated at intervals until the dispatcher answers his telephone. He immediately blows a blast on the proper whistle and the voice stops. Then by further manipulation of the whistles he discovers that the circuit breaker has opened and causes the machine to complete the circuit which closes the breaker. A further code signal tells him as to whether or not the breaker remains closed. When he has completed operations, a further blast of certain whisttles causes the distant telephone to hang up and the conversation is completed.

New Telephone Service Links Argentina, Chile and Uruguay.

Trans-Andean telephone service connecting three countries, Argentina, Chile and Uruguay, was inaugurated on June 22. The first conversations were between President de Alvear of Argentina and Buenos Aires and President Ibanez of Chile at Santiago, and then between President Campisteguy of Uruguay at Montevideo and the Chilean President.

The joint cooperation of the associated companies of the International Telephone & Telegraph Corp., The Compania Telefonica Argentina, the Chile Telephone Co., the National Cooperative Telephone Co. of Montevideo, and All America Cables, Inc., made possible the conclusion of this plan of communications. It is part of an extensive project of the International Telephone & Telegraph Corp. to join diverse countries of the South American continent through a network of communications which will also make possible in the future communications with the United States and Europe.

New technical problems and difficulties were encountered in construction of these circuits which, beginning in Valparaiso, Chile, on the Pacific Ocean, traverse the broken and mountainous country of Chile, the range of Andean Mountains, the vast Pampas of the Argentine, and for 66 miles follow the bed of the mighty Rio de la Plata by means of subfluvial cables, finally arriving at Port of Montevideo on the shores of the South Atlantic thus linking the two seas.

The means of communication employed are telephone circuits superimposed for a great part of the distance on the telegraph wires of the All America Cables International Telegraph lines which make use of subfluvial cables between Uruguay and Argentine, and of subterranean cables across Andes Mountains so as to avoid interruption caused by constant heavy snow storms and more particularly snow avalanches. Over these mountains, near the tiny hamlet of Las Cuevas in Argentine, the telephone circuit crosses at a height of 12,300 feet.

These circuits form vertebrae which will join these countries telephonically in the future. The circuits extend over 1,125 miles between Montevideo, Buenos Aires, Santiago and Valparaiso, making necessary the employment of more than 22,000 poles and of the latest communication methods, for problems entirely new in the communications field are said to have been encountered. Particular trouble was caused by failure of transportation due to heavy snow storms and slides, making necessary the use of pack mules to transport the necessary materials and equipment.

Eleven repeater stations were installed at strategic points. Three were installed in the Andes Mountains where attendants during winter season are isolated for months at a time due to the heavy snow falls. These snows in addition to being hazardous to the physical construction of the line also present natural difficulty to the work of the repair men and necessitate the use of snow shoes and other improvised methods for inspection and repair of the line during at least three months of the year.

Argentina Government Orders Rate Reduction.

Close upon the Argentina government's order for a cut in railroad tariffs, a new decree was issued July 12 calling upon the Union Telephone Co., Buenos Aires, to decrease its rate to subscribers five pesos quarterly on each line.

The government issued a statement that the company had earned more than 8 per cent profits during the fiscal year, after allowances for amortization and reserves.

It is reported that the government plans to regulate the exploitation of telephones throughout the country and a bill to this effect, it is stated, will be introduced in the Argentina congress at an early date.

The Mixed Ball

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

The word "if" is a small word, but a very tall one if we judge its height by the long, long shadow it casts in the lives of people who take it too seriously. How different most of our lives would have been if we had not stopped venturing when that pesky little "if" projected itself into our pathway.

In later years, how many of us have looked back into the past and regretted our indecisions. Truly, "if" is a tall word as it casts its shadow down the years of our future lives. It mocks us then. "If only I had done so-and-so . . . " Who is so sure and strong, I wonder, who has not at some time said these words.

That tall "if" not only suggests doubt of our ability to do the work we feel should be our chosen work, but it also creates doubt in our minds that we have any particular calling, and unless we take a definite stand for ourselves, we are going to lose our proper place in the plan of our Creator and so have to fill in some other way—a way which will not greatly matter if we fail and fail again thereafter.

When I was a little girl, I remember going with my mother to a carpet weaver's. In a bag which we brought along were balls of rags of many colors; some rich, bright colors; some black; some gray, and some a mixture of all colors.

My mother told the weaver she wanted the pretty richly-colored rags woven into a definite pattern or stripe, and the mixed colors woven in with the black and gray colors, as the mixed colors were just short odds and ends which were too good to throw away, but not good enough to be used in the stripe.

Likely that is the way our Creator has to do with the lives of people who belong to the odds and ends class.

"I would like to do so-and-so if . . ." That tall "if" with its long, long shadow. How many people it relegates to the "mixed ball" class! But we are never quite worthless to our Creator, for He knows that—

" . . . The ideal life is in our blood and never will be still. We feel the thing we ought to be beating beneath the thing we are."—Bishop Phillips Brooks.

Personal Notes from the Field

J. G. Crane, of Kansas City, Mo., vice-president, Theodore Gary & Co., and president, Diversified Investments, Inc., was host at a recent dinner in Chicago which marked the 25th anniversary of Mr.

Jason G. Crane, of Kansas City, Mo., Vice-President, Theodore Gary & Co., Who This Month Celebrated His 25th Anniversary in the Telephone Industry.

Crane's entrance into the telephone industry.

It was in July, 1903, that Mr. Crane, then just graduated in electrical engineering from Purdue University, Lafayette, Ind., entered the employ of the Western Electric Co. in Chicago, in a so-called students' course. Following several months in the switchboard cabling and switchboard wiring department of the company's Clinton street plant, Mr. Crane was transferred to the New York factory, and after several months there, went out on the road on telephone installation work.

From this he graduated into operating work, in which he has been engaged for about 20 years, now being in charge of operating the various telephone properties connected with the Gary interests in this country.

One of the guests at Mr. Crane's anniversary dinner was Stanley R. Edwards, editor of TELEPHONY, a Cornell electrical engineering graduate, who also commenced his work in the telephone field at the same time and place with Mr. Crane. They recalled happenings of 25 years ago, when they were in the "soldering line" and on the testing bench together, and of how the contents of the 10-cent lunch box were amply sufficient to satisfy their inner selves during the days of $10 a week wage.

Of the 30 college men who entered the Western Electric's employ in 1903, Mr. Crane and Mr. Edwards are the only ones who are now in the Independent field. Several are in the Bell Telephone Laboratories, the engineering department of the International Standard Electric Corp. in New York City, or with the Western Electric Co. Among the latter is Vice-President Clarence G. Stoll.

W. R. Hirst, safety director of the Indiana Bell Telephone Co. at Indianapolis, was recently awarded a 30-year service emblem, the presentation being made by J. W. Hannan, general superintendent of the plant. Mr. Hirst became eligible for the honor June 17. He first entered telephone work in 1896 with the American Telephone & Telegraph Co. as chief clerk and entered the employ of the old Central Union Telephone Co. in Indianapolis as special agent in 1904.

Mrs. Margaret J. Mills, who has been chief operator at Hominy, Okla., for the Oklahoma Telephone Co. for two years, leaves August 1 to accept employment with the Standard Telephone & Telegraph Co. at Skiatook, Okla. Mrs. Mill's husband, W. O. Mills, is general superintendent of the Standard Telephone & Telegraph Co. with headquarters at Skiatook.

Sergius P. Grace, formerly general commercial engineer for the Bell Telephone Laboratories, New York City, is now serving as assistant vice-president, the title having been conferred recently. During the past convention season, Mr. Grace met many Independent telephone men at various conventions, where he delivered his most fascinating and informative address on "Recent Discoveries in the Bell Telephone Laboratories." His many friends in the telephone industry will all be pleased to learn of his new title.

Mr. Grace was born in Farmington, Mich., in October, 1875. He received a general and technical education at the University of Michigan, graduating in the class of 1896 with the degree of bachelor of science in electrical engineering and in 1904 received the degree of electrical engineer from the same university.

In 1896, and until October, 1898, he was electrical engineer for the old Detroit Independent Telephone Co., Detroit, Mich. From October, 1898, to February, 1900, he acted as chief engineer and operating manager of the Peoples Telephone Co. of New Orleans, and from April, 1900, to September, 1908, he occupied, among others, the positions of general superintendent, Beaumont Telephone Co. of Texas and chief engineer of the Interstate Independent Telephone Co. of New Jersey.

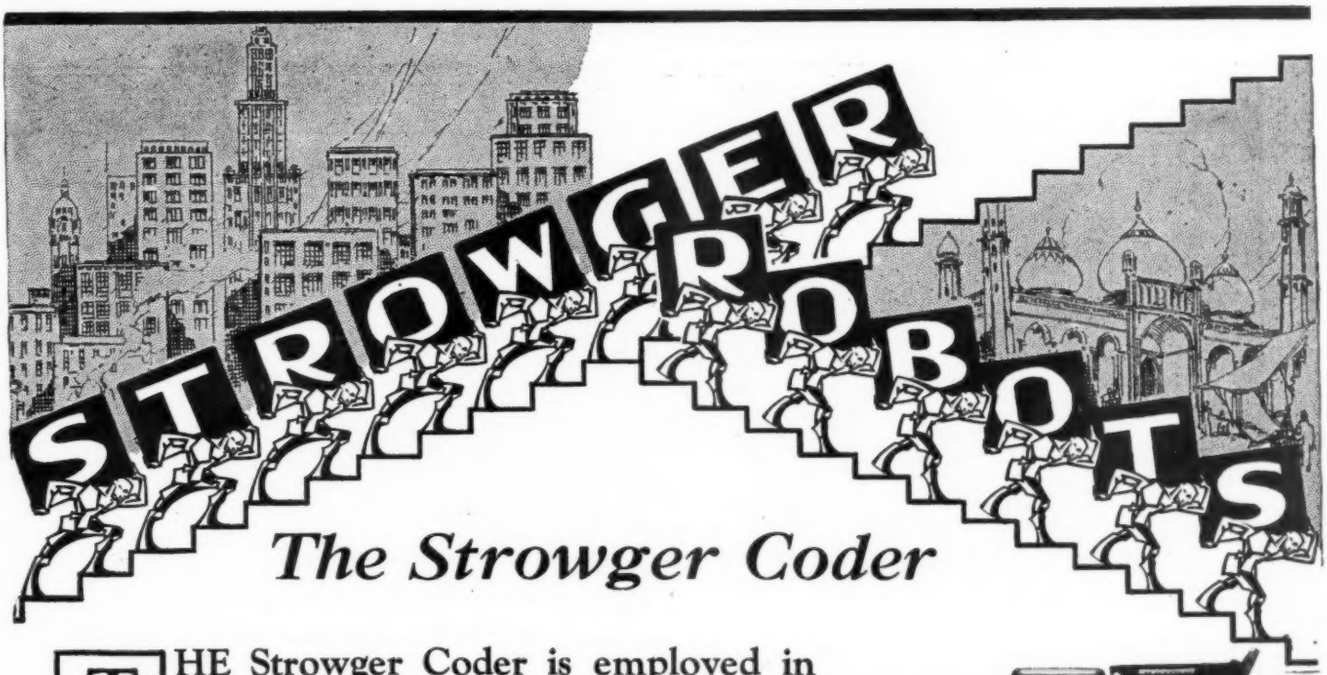
He was also with various Bell companies during this period. He was general superintendent of plant for the Bell company in western Pennsylvania from 1908 to 1914. He was elected to the presidency of the Engineers Society of Pennsylvania in 1913.

In 1914 he engaged in consulting telephone engineering and in April, 1915, was made assistant chief engineer of the New York Public Service Commission for New York City telephone rates cases.

The year 1919 found Mr. Grace assistant to the chief engineer of the New York Telephone Co., Bell Telephone Co. of Pennsylvania, and Chesapeake & Potomac Telephone Co., where he directed the inventory and appraisal of the companies' properties in commission cases and appeared for the companies in the presentation of testimony on valuation, finance, and engineering before the New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, West Virginia and Ohio Public Service commissions. For the past five years Mr. Grace has been with the Western Electric Co. and the Bell Telephone Laboratories.

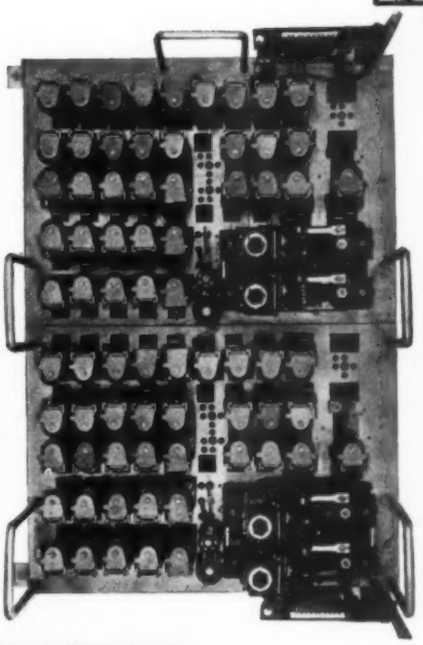
Practically all of Mr. Grace's time since leaving college, with the exception of the past ten years, has been taken up in the design, construction and operation of telephone systems. For a period of ten years he was in charge of the design, construction and operation of the plant of the Bell telephone system in Pittsburgh and a radius of 150 miles. This was at a time of very active construction, about $15,000,000 of plant being built.

Sergius P. Grace, Well-Known to the Independent Field Through His Addresses at Many Telephone Conventions the Past Season, Is Now Assistant Vice-President, Bell Telephone Laboratories, New York City.



The Strowger Coder

THE Strowger Coder is employed in Director exchanges, its function being to automatically convert dialled impulses into code impulses for actuating Coder Call Indicator equipment at exchanges still manually operated.



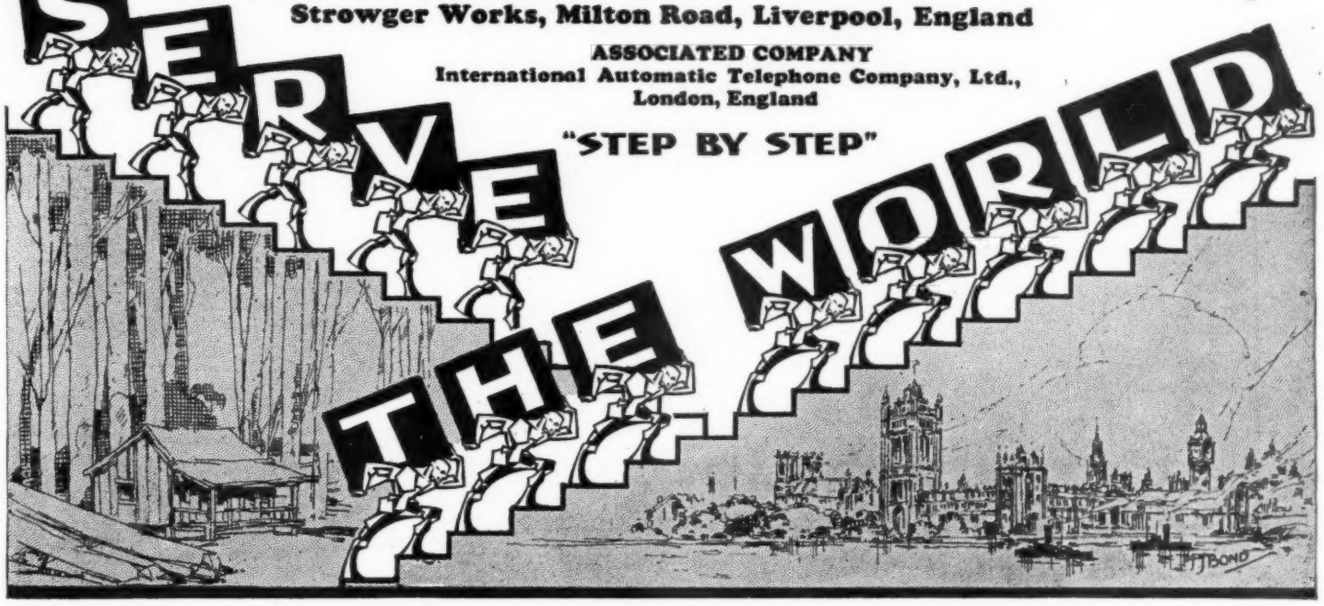
The Coder comprises an assembly of twenty-six "Strowger" Relays associated with two Strowger Rotary Lineswitches designed for "heavy duty," the whole being conveniently concentrated on a common mounting.

Automatic Telephone Manufacturing Company, Ltd.

Strowger Works, Milton Road, Liverpool, England

ASSOCIATED COMPANY
International Automatic Telephone Company, Ltd., London, England

"STEP BY STEP"



Everyone had said

Thirty-five Strowger Automatic Exchanges of the "In-Between" Size

Of the 124 independent Strowger Automatic exchanges in operation in the United States, Thirty-five, or 28%, are of sizes ranging from 200 to 900 lines of equipment. Their daily records prove them to be as consistent profit makers as are the very large and the very small sized exchanges.

STROWGER

When writing to Automatic Electric Inc., please mention TELEPHONY

Automatic Operation Won't Pay In Your Town"— But It Does!

THERE are always people who say, "Yes, it may be fine for some other town, but it won't be a profitable investment in yours". There were some such prophets who made similar forecasts for the city of Brazil, Indiana, before its conversion to automatic operation. But they were doomed to early disappointment.

After being in operation now for more than a year, the Strowger Automatic equipment at Brazil has proved itself a paying proposition. In spite of the fact that some operating labor is necessary for the handling of toll, information and similar services, Strowger Automatic operation has already been productive of so many desirable results other than just the one of replacement of local operators, that both the telephone company and the telephone using public are equally enthusiastic about it.

The public has found that the increased speed, accuracy and convenience of automatic service must be experienced to be fully appreciated; and that the more one uses the automatic telephone the more enthusiastic he becomes over it. This public enthusiasm, when substituted for former criticism, becomes one of the telephone company's most valuable assets. It means adequate rates, increased business and continued expansion, freedom from petty complaints—in other words, *profitable operation*—the basic reason for the increasing adoption of Strowger Automatic operation by progressive telephone companies everywhere.

Automatic Electric Inc.

Factory and General Offices: 1033 W. Van Buren St., Chicago, U. S. A.

Sales and Service Offices in All Principal Cities

EXPORT DISTRIBUTORS

For Australasia **-- Automatic Telephones, Ltd.**
Elsewhere **-- Automatic Electric Company, Ltd.**

AUTOMATIC

New Service in Pennsylvania Towns

Passing of the "Crank" in Towns of Ephrata and Lititz, Pa.—Installation of Kellogg Six-Position Multiple Switchboard—History of Denver & Ephrata Telephone & Telegraph Co. One of Progress—Underground Cables Installed

By Charles Ruge,

Advertising Departme nt, Kellogg Switchboard & Supply Co., Chicago

For 40 years the people of Ephrata and Lititz, Pa., have had to turn the crank to get "Central." Times have changed and now these two rapid-growing boroughs are enjoying fast common battery service.

On June 1, 1927, work was started on the installation of a new Kellogg six-position multiple switchboard equipped with 460 common battery lines, 60 rural lines and 40 trunk lines. This switchboard was put into service November 26, 1927, much to the enjoyment of the Denver & Ephrata Telephone & Telegraph Co.'s subscribers.

The new plant will take care of all telephone growth in Ephrata borough and surrounding territory for a number of years. The ringing is of semi-selective type in the borough and open ringing on rural lines. The selective ringing in the borough will not be used until all of the new common battery telephones have been installed.

The unsightliness of telephone poles in the vicinity of the telephone exchange has been done away with. All incoming lines are run through underground cables. This has proved very economical as the damage generally caused by storms is eliminated.

A six-position Kellogg common battery multiple switchboard of the same size and capacity as that used at Ephrata was installed at Lititz last year. Due to the better telephone service the telephone company has experienced a big increase in subscribers.

The history of the Denver & Ephrata Telephone & Telegraph Co. has been one of progress. On May 11, 1911, a charter was granted to the Denver & Ephrata Telephone & Telegraph Co., which was organized by local people. That the people of Ephrata are still backing their telephone company is shown by the fact that it boasts of 270 stockholders.

Board of Directors of Denver & Ephrata Telephone & Telegraph Co., Ephrata, Pa. Front Row: W. F. Brossman, President; C. E. Eaby, Vice-President and General Manager; D. W. Buch, Treasurer, and D. W. Artz, Secretary. Rear: Monroe Lausch, Director; Bertha Brossman, Director and Office Manager, and J. C. Nissley Director.

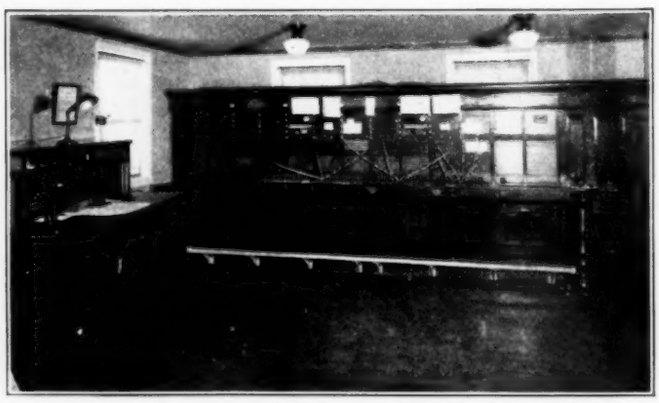
The first switchboard installed at Ephrata was of the single position type with 50 lines equipped. One year later it was necessary to put in a two-position switchboard which took care of the business until 1924. At that time another position was added, and in 1926 the fourth position was installed. These boards soon were filled to capacity, and in 1927 the new common battery switchboard was purchased.

The borough of Lititz has experienced an equally colorful growth. A 200-line Kellogg magneto switchboard was installed in 1915 and additions were made gradually until 1927, when the new Kellogg multiple switchboard was installed in the company's new home located at 104 East Main street in Lititz. The properties are managed by The directors are: W. F. Brossman, C. E. Eaby, D. W. Buch, D. W. Artz, Bertha M. Brossman, Monroe Lausch and J. E. Nissley.

Transatlantic Telephone Traffic Averages 35 Calls Daily.

From the opening of service on January 7, 1927, to the close of business on June 30, 1928, a total of 6,775 commercial messages have been handled over the transatlantic telephone link.

The average number of completed messages daily since April 1, 1928, has been 35 and the largest day's traffic has been 61 messages. The service is open from 6:30 a. m. to 10 p. m., New York time.

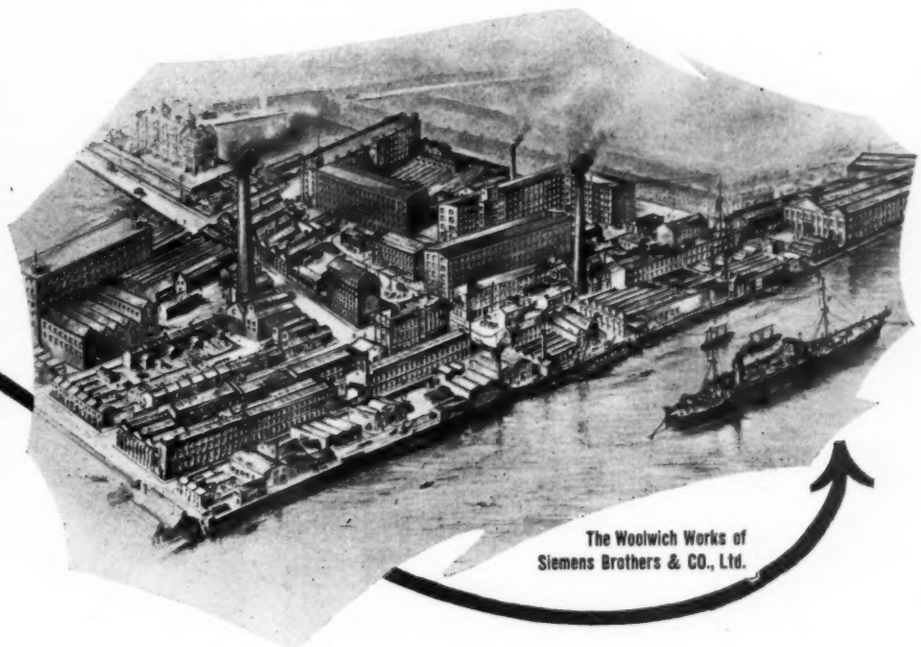


Kellogg Multiple Common Battery Switchboard in Exchange at Lititz, Pa.—The Six-Position Kellogg Common Battery Switchboard at Ephrata, Pa.; Both These Exchanges Are Operated by the Denver & Ephrata Telephone & Telegraph Co.

SIEMENS

TELEPHONES

The number of
PUBLIC AUTOMATIC EXCHANGES
in
GREAT BRITAIN
now totals
OVER 100
of these
42
were manufactured by
SIEMENS BROTHERS & CO., Ltd.
at the Works here shown.



The Woolwich Works of
Siemens Brothers & CO., Ltd.

CONTRACTORS FOR
THE SUPPLY AND ERECTION OF

COMPLETE EXCHANGES

— AUTOMATIC AND MANUAL —

for

Public and Private Service
in all parts of the world

SIEMENS BROTHERS & CO., LTD.

WOOLWICH, S. E., 18, ENGLAND

Representation Abroad: *Winnipeg, Rio de Janeiro, Cairo, Khartoum, Cape Town, Johannesburg, Melbourne, Sydney, Brisbane, Adelaide, Perth, Hobart, Wellington, Auckland, Tokyo, Tientsin, Harbin (Manchuria), Calcutta, Bombay, Madras, Ipoh (Perak F. M. S.), Kuala Lumpur, Singapore, Penang, Bangkok, The Hague.*

When writing to Siemens Bros. & Co., Ltd., please mention TELEPHONY.

LaFayette, Ind. Converts to Automatic

Telephone System of Progressive Indiana City Switched to Automatic Operation on June 30—Equipment Details—Prominent Citizens, Representatives From Automatic Electric Inc. and Indiana Bell Telephone Co. Present at Cutover

By C. I. Kuppinger,

Publicity Department, Automatic Electric Inc., Chicago

Promptly on the stroke of midnight, Saturday, June 30, workmen at the Main and West manual offices in LaFayette, Ind., began cutting the cables that had for so long handled the telephonic load of the city. In a few moments the word came to those assembled in the new automatic switchroom that all was clear. The insulators in the line switches were then pulled out by means of strings tying them together, and in less time than it takes to tell LaFayette's telephone system was switched to automatic operation.

The first "official" call signalizing the event was dialed by Mayor A. R. Ross. Wm. Goody, president of the First Merchants Bank, and J. D. Bartlett, prominent business man, were among those who were present on the occasion. Officials of the LaFayette Telephone Co. present were John Dewenter, president; C. Q. Erisman, vice-president, and F. O. Cuppy, who is both secretary-treasurer and manager for the company.

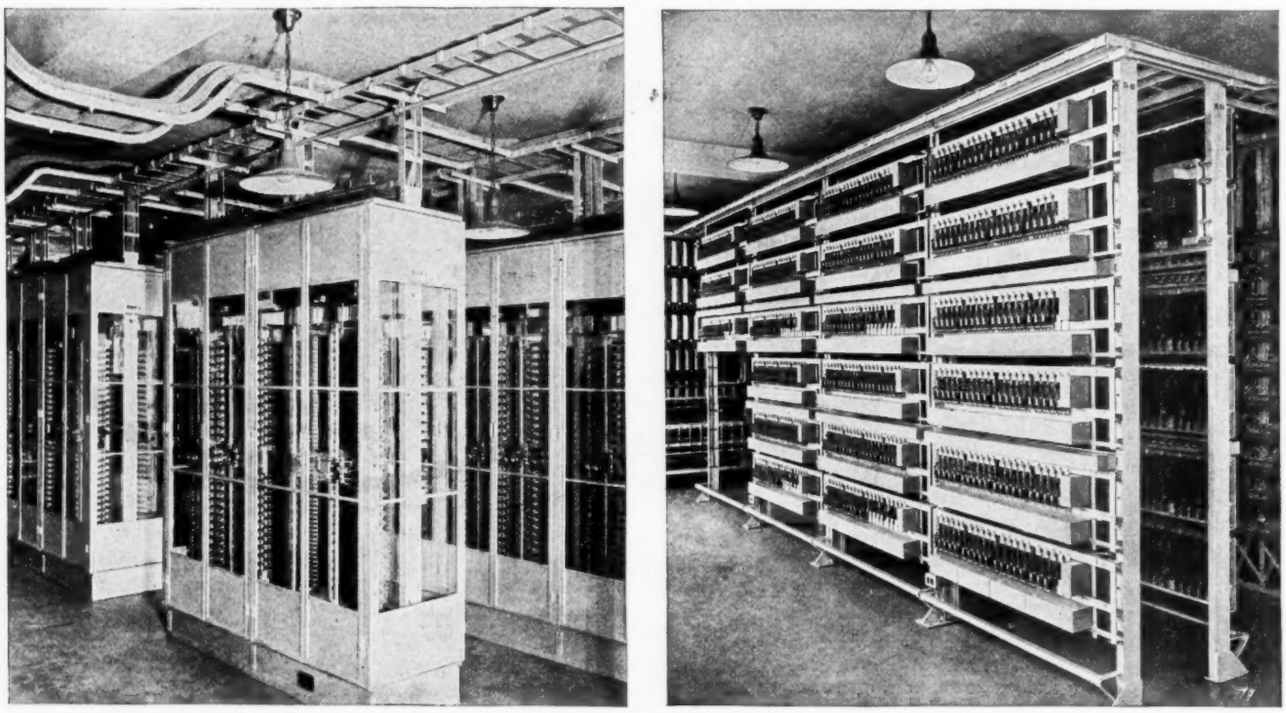
The members of the board of directors, in addition to the three officials named, are Roy Adams, Ferd Dryfus, Thomas Duncan, Lee Glatz, M. G. Ricks and Wm. R. Wood. There were also in attendance a considerable number from Indianapolis representing the Indiana Bell Telephone Co., which company installed and will operate the new toll board located on the third floor. This board has 12 positions and was cut into operation at the same time that the automatic equipment on the fourth floor went into operation.

Automatic Electric Inc., of Chicago, which company manufactured and installed the automatic equipment, was represented by a large number, among whom were A. B. Smith, chief research engineer; H. P. Mahoney, assistant chief engineer; H. E. Clapham, advertising manager; R. H. Burfeind, sales engineer; L. L. Ruggles, C. I. Kuppinger, C. S. Cadwell, W. H. Perkins, G. Sorber, T. F. Crocker and R. Bergendahl. Carl Pracht was in charge of the cutover for Automatic Electric Inc., being ably assisted by C. R. Brown, engineer for the LaFayette company. R. D. O'Conner was foreman in charge of the work of installation, and, together with his crew, deserves credit for a very excellent job.

The new telephone building is located at the corner of Main and Seventh streets, in the business section of LaFayette. It is four stories high, of reinforced concrete construction, with brick exterior. The first floor is to be occupied by commercial and executive offices of the company, and while not entirely completed as yet, it presents ample capacity and excellent arrangement for these purposes.

An automatic elevator gives access to the other floors, the second of which is to be utilized for various offices of the company. The third is used for long distance purposes, with convenient operating and rest rooms for the toll operators. On the fourth and top floor is located the new automatic equipment. A very efficient layout has been worked out, the special desks being located adjacent to the windows, giving them excellent light and ventilation.

Special heating provisions have been made whereby fresh air is drawn from the outside and passed over radiators before entering the switchroom. The power equipment and battery room are also located on this same floor, making, for so large an office, an unusually concentrated and convenient arrangement. The basement is to be utilized for storing equipment and supplies.

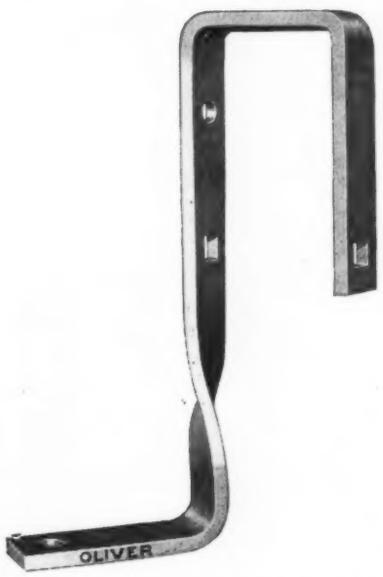


A View of the Primary Line Switchboards Installed in the New Building of the LaFayette Telephone Co., LaFayette, Ind., Which Are of the 200 Switch Type—Rotary Secondary Line Switches.

A Favorite with Telephone Companies—
OLIVER TRANSPOSITION BRACKETS!

Oliver Transposition Brackets have been favorites with the leading Telephone and Telegraph Companies for many years, but have never been more popular than they are to-day.

Made from new rolled open-hearth steel and galvanized by the "Fassinger Process" they will give many years of faithful service on the line. All Transposition Brackets are made to the exacting specifications of the American Telephone and Telegraph Company and The Western Union Telegraph Company. For more complete information about these brackets write for the condensed catalogue of Oliver Pole Line Material.



This is stock No. 5046, 1¼" x $\frac{5}{16}$" 1 wire type. (A. T. & T. Co. Standard). No. 5047 is the standard 2 wire type.

For Easy Reference, Use This Table:

Stock No.	Type	For Cross Arms	Weight Per 100 Pieces
§5045	1¼"x$\frac{5}{16}$" 1-wire	3" x4"	245
†5046	1¼"x$\frac{5}{16}$" 1-wire	3¼"x4¼"	245
†5047	1½"x$\frac{5}{16}$" 2-wire	3¼"x4¼"	378
5048	1½"x$\frac{5}{16}$" 3-wire	3¼"x4¼"	750

†A. T. & T. Co. St'd §W. U. T. Co. St'd

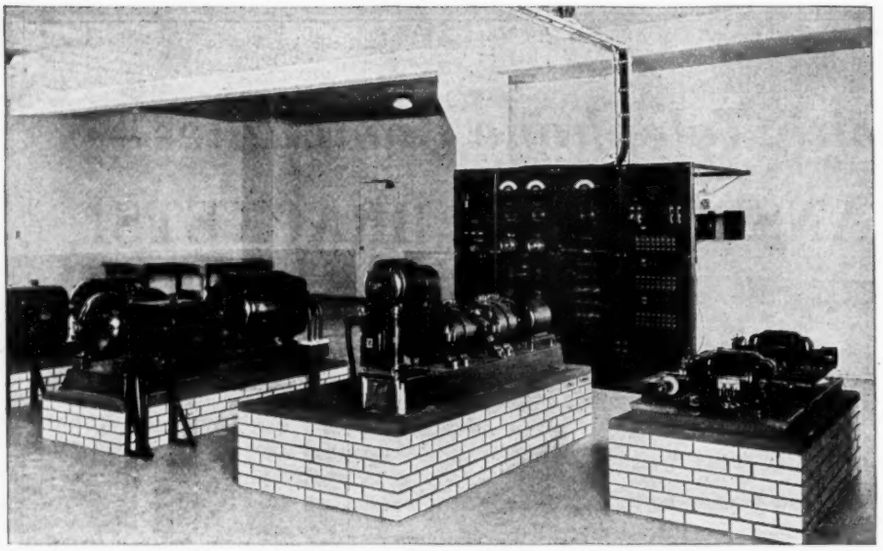
A Complete Line of Pole Line Hardware!

Oliver Iron and Steel Corporation

South Tenth and Muriel Streets

Pittsburgh, Pa.

"OLIVER THE LINE"



Motor-Generator Charging Sets and Ringing Machines at LaFayette, Ind., with Power Board in Background.

The new building and plant equipment compose a noteworthy civic improvement for the city of LaFayette. With a population of over 25,000, it is one of the most progressive and active cities in Indiana, a state noted for the civic spirit and alertness of its citizens. Built "on the banks of the Wabash," with picturesque hills rising to the east and to the west, LaFayette bounds in scenes of beauty.

It is the home of Purdue University, one of the best known engineering and agricultural schools in the United States. The university buildings are situated on the west side of the river and form, together with the homes of the faculty and the extensive dormitory and fraternity houses for the students, a community in themselves, separated from the city proper by some two miles.

For over a month before the time of the cutover, a special demonstration set was on display in the offices of the telephone company on the first floor of the new building. Large full length windows front directly on the main business street of the city. A sign in these windows called attention to the exhibit, and invited everyone to come in and ask for a demonstration of the method of dialing so that they could see for themselves how the new equipment operates. Besides this means, which proved to be decidedly effective, free use was made of the newspapers to prepare the telephone-using public for the coming conversion.

Girl operators also tested every line individually, and requested the person answering the call to try dialing in once or twice under their supervision. By this means, at least one person in every home using a telephone was assured of knowing how to operate the dial properly. That the pre-cutover preparation was done effectively has been clearly evidenced since the cutover by the small number of complaints and requests for assistance in dialing which have been received.

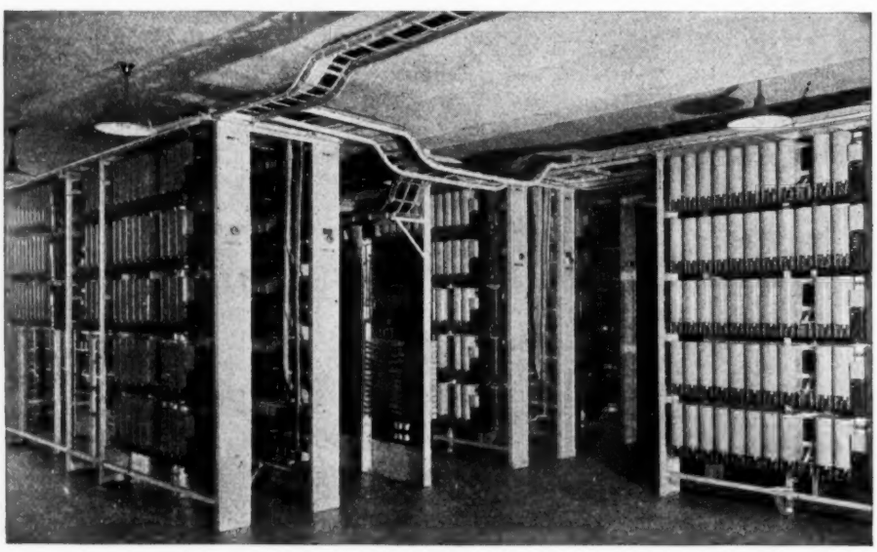
There are now over 8,500 telephones in operation in LaFayette. The existing instruments were made use of by simply attaching new type 24 dials to them and making the necessary changes in the circuits.

Strowger Automatic Selector Boards in the New Main Office of the LaFayette Telephone Co., LaFayette, Ind.

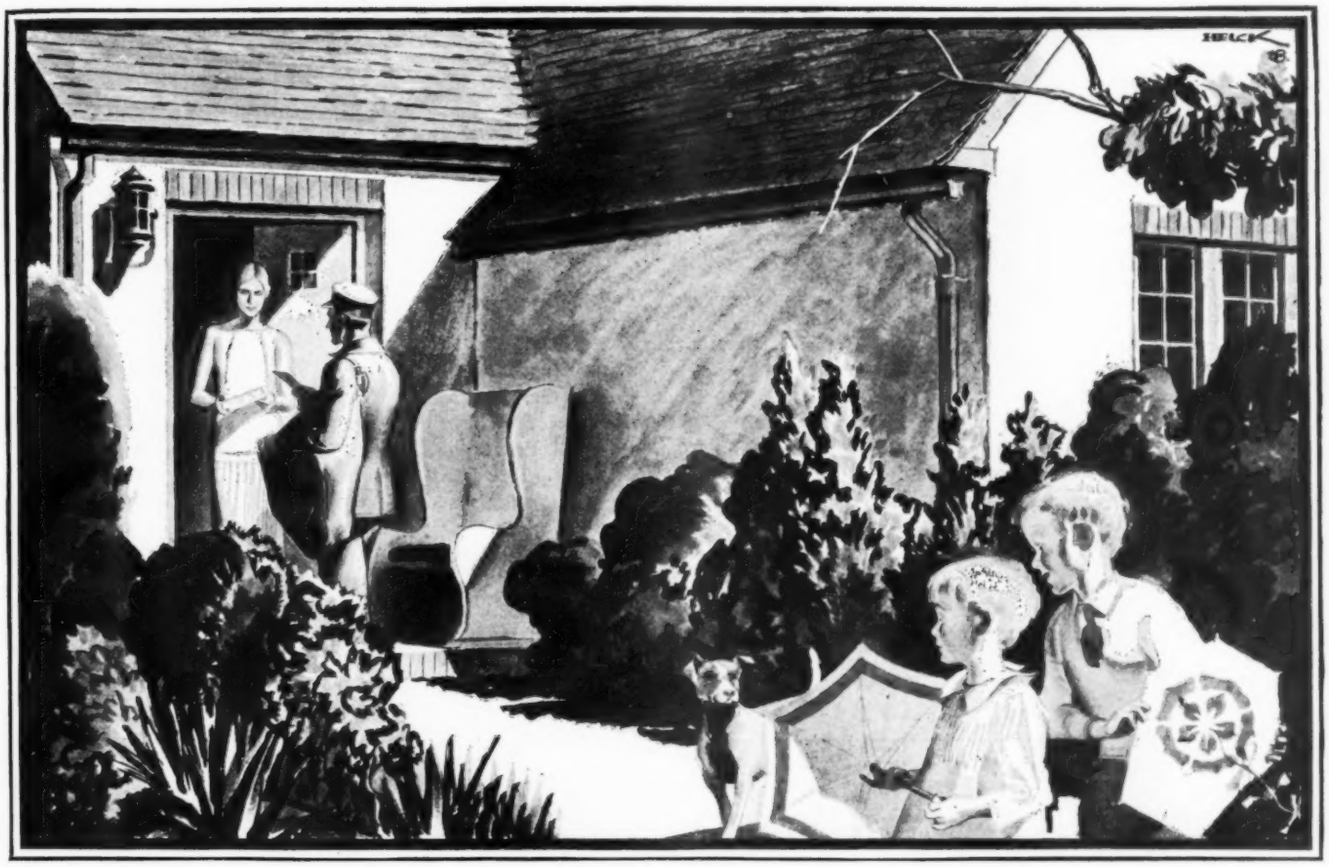
To provide service for these telephones, 6,200 lines of Strowger automatic equipment are installed, which take care of the entire telephonic load of the city and supplant the two formerly existing manual offices, Main and West. Of this 6,200 lines of equipment, 3,200 lines are for straight line operation, 2,400 lines are for combination service—that is, either straight line or party line operation—and 600 lines for party line or P.B.X. operation. In addition to the city traffic, there are 84 eight-party rural lines, which will all be handled automatically.

The primary line switches are of the plunger type, while the secondary line switches are of the rotary type. A primary-secondary line switch distributing frame is provided for greater flexibility in inter-connection. The line switchboards are of the 200 switch type, the connectors being mounted on separate trunk boards. Special toll train equipment is provided, together with the necessary special switches, such as reverting call, test distributors, etc.

The power equipment is located in the back part of the switchroom, adjacent to the specially-constructed battery room.



Connector Boards of the LaFayette Telephone Co., LaFayette, Ind.



Where the Bell System's profit goes

An Advertisement of the
American Telephone and Telegraph Company

THERE is in effect but one profit paid by the Bell Telephone System. This profit is not large, for it is the policy of the Bell System to furnish a constantly improving telephone service at the least cost to the public.

The treasury of the American Telephone and Telegraph Company receives dividends from the stock of the operating companies. It receives a payment from the operating companies for research, engineering and staff work. It receives dividends from the Western Electric Company—makers of supplies for the Bell System—and income from long distance operations.

Only one profit is taken from this money in the American Telephone and Telegraph Company's treasury. That is the regular dividend to its stockholders—now more than 420,000 in number—which it has never missed paying since its incorporation in 1885.

Money beyond regular dividend requirements and a surplus for financial stability is used to give more and better telephone service to the public. This is fundamental in the policy of the company.

The Bell System accepts its responsibility to provide a nation-wide telephone service as a public trust.

There are two motor-generator sets, both operating from the commercial power supply of 220 volts, 60-cycle, three-phase. One of them generates 220 amperes at 50-65 volts, while the other one produces 80 amperes at 50-65 volts. The charging system is designed to operate on a full float basis, so that one or the other, or both charging sets will be in operation all the time.

Four ringing sets furnish the necessary ringing current. Two of the sets furnish ringing current at the following cycles, 16, 33, 50 and 66 cycles; one of these sets operating on the commercial current of 220 volts, while the other operates from the storage battery in case of failure of the commercial power supply. The other two sets supply 25-cycle ringing current and are also equipped with the necessary interrupter attachments, for busy tone, dial tone, etc.

One of these latter machines operates on commercial current, while the other is an emergency set which operates from the storage battery. All of the charging and ringing sets are mounted on specially constructed bases of cream-colored pressed brick, pointed with black cement, and present an unusually attractive appearance. The power board upon which all control apparatus and supervisory equipment is mounted, is conveniently located just to the rear of where the charging and ringing sets are installed.

As mentioned before, the special desks are located in the front part of the fourth floor, where they have excellent light and ventilation. There is a two-position test desk, a four-position information board, of which three positions are at present equipped, a one-position complaint desk and a one-position service observing board. All of this special equipment was manufactured and installed by Automatic Electric Inc.

The conversion of LaFayette's telephone system to automatic operation has been under consideration for a considerable period of time, and it is to the lasting credit of President John Dewenter and Manager F. O. Cuppy and their associates in the LaFayette Telephone Co., that the project has been carried out to its successful culmination. Previous to the cutover, 64 operators were being used to supply telephone service to the city. Under Strowger automatic operation, only 12 operators will be retained for such services as information, service observing, etc.

Thus the release of 52 operators is effected, which will make a very material reduction in the current operating expenses of the company.

Besides this, LaFayette can now boast of the same modern and convenient automatic service as can other cities in Indiana equipped with the same Strowger type of automatic operation, some of the larger of which are Indianapolis, Terre Haute, Fort Wayne, Brazil, Rushville and Richmond.

With the Manufacturers and Jobbers

Harding Sells Interests in Holtzer-Cabot and Retires.

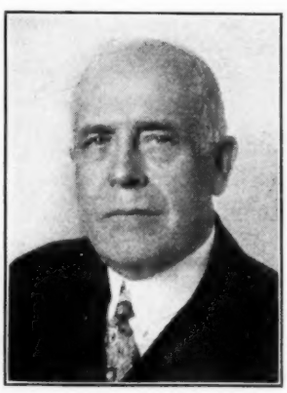
Edwin R. Harding, president, and William S. Kemp, treasurer and Thomas W. Ness, former signal sales manager of the Holtzer-Cabot Electric Co., Boston, Mass., large minority stockholders in the company have sold their holdings. Mr. Harding and Mr. Kemp have tendered their resignations to be effective at an early date. Mr. Ness retired some months ago.

Mr. Harding has been connected with the Holtzer-Cabot company for nearly 30 years. He is a native of Maine and a graduate of Bowdoin College with the class of 1885, receiving a degree of A. B. upon graduation, and later having conferred upon him the honorary degree of A.M. by the same college. After graduation he taught for a few years, being the principal of Patten Academy, Patten, Me., and principal of Winthrop High School, Winthrop, Mass.

He then went to Chicago and entered the employ of the Edison General Electric Co. While with the Edison company, he was the first to develop an electrical variable-speed foot-control rheostat and motor used for dental drilling purposes, the principle of which is so commonly used now in dental offices.

In 1898 Mr. Harding established the western office of the Holtzer-Cabot Electric Co. with headquarters in Chicago. He gradually developed a western business until 12 of the mid-western states were added to, and controlled by, the Chicago office. He did a very large business for the corporation. In 1908, the company, by the suggestion of, and under the supervision of Mr. Harding built a fire-proof reinforced concrete building at 6161 South State street, Chicago, as an office, warehouse and small manufacturing shop in order to give better and quicker service to the western customers.

Mr. Harding had much to do with the pioneer development of the motor business. He induced his company to develop a line of multipolar direct current motors, and his company was foremost in the field with this type. He was among the first to push the development of split-phase, fractional horsepower alternating current motors (manufactured under the Tesla patents at that time) so that they would have sufficient starting and pull-through torque to make them commercially practical for special household and office application work. These were the days when the old Edison bi-polar motor was in vogue, and the Stanley alternating current power motor had to be started by pulling the driving belt



Edwin R. Harding, President, and William S. Kemp, Treasurer, of Holtzer-Cabot Electric Co., Who Have Sold Their Holdings and Retired from Company.

He had been very active in the Independent telephone manufacturing field in developing and manufacturing telephone electric power plant machinery. The noiseless type of generator for charging telephone storage batteries and telephone signal apparatus of all kinds has been greatly improved under his supervision.

For many years Mr. Harding was a director and first vice-president of the company in charge of the western states with headquarters at Chicago. In 1924 he was called East and made president.

His policies have been ones looking to efficiency in all departments:

Cutting out extravagant habits induced by the war period; cutting down top-heavy overhead in both personnel and system; a determined drive to lower the cost of product by: time studies of set ups and operations as a basis of study for speeding up production; the invention and development of special machines to perform specified operation; the coordination and sequence of operations in the transposition systems of production; making scheduling systems more flexible so that they be fitted better to the nature of the manufacturing to be done; and a constant drive at better mechanical engineering, better design, and better tool study in order that the engineering designs of product will be the better suited

They're Paging You at French Lick Springs

Balmy breezes from the Cumberland foothills give zest to outdoor sports. Take your pick of two of the finest 18-hole golf courses in America—the tricky Championship Course for the experts, the inner course for those who take their golf more casually. Long, uncrowded fairways and greens that are "slick as a whistle"—the courses you've played in your dreams!

Ride or hike along the numerous picturesque wooded trails, get in a few sets of tennis, take a plunge in the pool, or relax on broad, cool verandas. Drink the sparkling, health-giving natural waters of Pluto, Bowles, and Prosperine Springs. Take the famous rejuvenating mineral baths. Enjoy the delicious cuisine, the metropolitan comforts and conveniences of French Lick Springs Hotel.

Easy of access from everywhere by rail—or motor down over smooth highways. Ample garage accommodations.

Wire or write today for reservations

FRENCH LICK SPRINGS HOTEL CO.
French Lick, Indiana
"Home of Pluto Water"

A Controlled Flame

Prest-O-Lite Blow-torches, which use Prest-O-Lite Gas only, supply a flame that is always under perfect control. Heat can be applied exactly where you want it. Even the most delicate connections can be soldered without injury to the adjacent parts.

There is a Prest-O-Lite Torch for every soldering or heating purpose. Telephone companies everywhere use Prest-O-Lite equipment for lineman's work and in the shop as well. Most of the larger utilities have standardized on Prest-O-Lite.

Ask the Prest-O-Lite distributor about this equipment, or write us direct for complete information.

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Prest-O-Lite GAS

to efficient factory production methods.

During his presidency, the Holtzer-Cabot company has made much progress in the reduction of cost of product.

Mr. Kemp entered the employ of the Holtzer-Cabot company December 1, 1904, and a few months later became treasurer and director, which positions he has held until he resigned.

Previous to associating himself with the company, he was cashier of the Brookline National Bank of Brookline, Mass., now the Brookline Trust Co. While with that bank he was the originator of what was commonly called the "Envelope systems," by which each depositor's account was balanced every month. Prior to the adoption of that system, the accounts were only balanced when the depositor's bank book was presented for that purpose. The system was extensively adopted and continued in use until the mechanical bookkeeping machine made the use of the present bank statement possible.

As treasurer of the Holtzer-Cabot Electric Co., he handled all credits and financial matters and had supervision of all the accounting. While he has a large acquaintance in financial circles, he is best known as in industrial cost accountant.

During the season of 1922-23 he gave a series of talks before the Boston chapter of the National Association of Cost Accountants. These talks created so much interest in the accounting field that with his permission, the National Association of Cost Accountants of New York published them in book form under the title of "Departmental and Standard Costs." This book has had a wide distribution. The following year, he was elected president of that association.

In 1926 as a representative of the association, he delivered a paper before the International Accountants' Congress at Amsterdam, Holland. For a number of years he has been a member of the standing committee on "Standard Accounting and Cost System for the Electrical Manufacturing Industry."

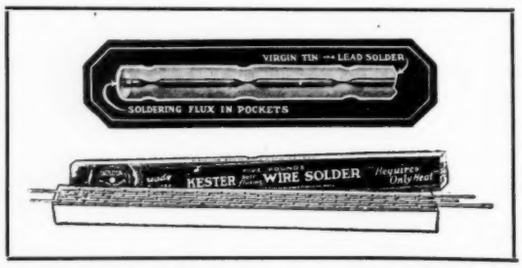
From the day Mr. Harding became treasurer of the Holtzer-Cabot Electric Co. up to the date of his resignation, a period of nearly 25 years, the company never failed to discount a bill subject to a cash discount and to promptly pay all other bills. He leaves the company with no floating indebtedness and in a strong financial condition.

Two years ago, with his family, he spent a year in travel abroad. He expects to spend the coming year touring this country and its many interesting places.

Mr. Kemp is a past master of Bethhoron Lodge, A. F. & A. M. and a member of many other fraternal and business organizations.

A New Type of Solder—Kester Paste Core Solder.

Another solder has been added to the line of Kester core solders to make this well-known brand more complete. The new product is known as Kester paste core solder and combines paste and solder obviating the need of separate solder and paste for soldering jobs.



Enlarged Cross-Section of Kester Paste Core Solder and Box in Which Sticks Are Packed.

The new Kester paste core solder is made of virgin tin and lead in hollow wire form, filled with a soldering paste that is pocketed in such a manner as to allow just the right amount to be released as heat is applied to the solder. The illustration shows its construction.

Approximately, 150 18-inch lengths of No. 5 gauge (3/32-inch) diameter paste core solder are packed in a five-pound box.

Users of soldering paste will welcome this combined solder and paste which simplifies soldering, and at the same time, it is said, reduces the cost.

Complete information regarding this new solder may be obtained from the Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill.

Brazilian Telephone Co. Orders Automatic for Campinas.

Orders have been received by Automatic Electric Inc., of Chicago, Ill., for 2,000 lines of Strowger automatic equipment for the city of Campinas, Brazil. The order was placed by the Brazilian Telephone Co., which owns and operates a large number of exchanges in eastern Brazil, including the telephone systems of Rio de Janeiro and Sao Paulo. In this latter city one exchange, Palmeiras, consisting of 5,000 lines, has already been cut over to Strowger automatic operation, while another, Central, consisting of 7,500 lines, is to be installed as soon as the building being erected to house it is completed. Due to increasing demands, orders have also recently been placed for 1,000 lines of additional equipment for Palmeiras office, all of the equipment being furnished by Automatic Electric Inc.

Campinas is located about 50 miles northwest of Sao Paulo. It has a population of over 120,000 and is one of the large and important cities of Brazil. It is the center of the coffee plantation district, this comprising the main industry for the surrounding area. Some sugar cane is also raised in this locality.

A new building is being erected for the automatic equipment. The outside cable plant is also being rebuilt along modern and up-to-date lines, so that when the automatic equipment is cut into operation, the whole telephonic system of Campinas will be almost entirely new, and it will comprise a most modern and efficient system of communication for the city's people.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies--Summary of Commission Orders and Schedule of Telephone Hearings

Pacific Bell Rejects Franchise Proposed for Portland, Ore.

Definite and formal refusal of the Pacific Telephone & Telegraph Co. to accept the telephone franchise proposed by the city of Portland, Ore., was made July 6 before the city council, through Omar Spencer, attorney. The franchise refused by the company is one prepared by John M. Mann, commissioner of public utilities, and Frank H. Grant, city attorney.

It provides, in brief, for a 25 per cent reduction in rates all down the line, and prohibits or curtails charges that are now made by the company for certain lines of service—it prohibits demand payment in advance after one year of payment by the telephone user; it prohibits charging for connections when there is no physical change made in the telephone; it prohibits charge for service calls, etc.—and it fixes the schedule of rates that may be charged as a part of the contract between the city and the company for the use of the streets of Portland.

The definite refusal of the Pacific company to accept the franchise as proposed was read from a typewritten statement by Attorney Spencer, and this document was filed with the council.

This document declares that if the franchise was adopted it would be illegal and void, and contended that the council has no

right to fix rates, that being a function entirely of the state, nor has the company any right to accept rates fixed by the council, on the same grounds, and that neither the city nor the company has the right to enter into contract which is based on any rate-making set up by the city.

The refusal of acceptance ended with the declaration:

"The company cannot and will not be a party to any proposed contract which could not be enforced and which would subject it to the charge of violating the law of the state of Oregon."

Clashes between the representatives of the company, the members of the city council and spectators took place at frequent intervals. They started when members of the council accused the Pacific company of discourtesy in not answering a request by the city for information.

The charge was followed by a countercharge on the part of the company that the city had been discourteous in not acknowledging the company's proposal of a franchise and in keeping it waiting for a year without a hearing.

Mayor Baker declared that the council will submit a franchise to the people and the company can take it or leave it.

Restrains Severance of Connections Pending Commission Action.

Money owed to the Johnson County Telephone Co., Franklin, Ind., by the Providence Telephone Co. could be properly recovered by civil action or by a conference between the officers of the two companies, the Providence Telephone Co. states in an injunction action brought in the Johnson circuit court at Franklin, against the Johnson County company.

Service to the Providence exchange was discontinued July 3 by the Johnson County Telephone Co. because, it is claimed, the Providence company had not made a settlement for long distance toll service through the Franklin exchange.

The Providence Telephone Co., in its complaint for the issuance of a restraining order, declared that since the purchase of the Franklin Telephone Co. last July by the new organization, the officers of the Providence company have been unable to secure an audience with officials of the Johnson County Telephone Co. in regard to a contract.

The Providence Telephone Co., through its officers, declares that in the absence of any contract or agreement they do not know the amount which they owe the Johnson County Telephone Co. It is admitted that the Providence Telephone Co. owes the Johnson County Telephone Co. a portion of the charges collected for toll calls originating on the lines of the Providence company. What the total amount is has not been determined.

The Providence company has filed a petition with the Indiana Public Service Commission asking it to fix the rates and toll charges that would be just and fair between the Providence and Franklin exchanges. The restraining injunction issued against the Johnson County company by Judge Fremont Miller of the Johnson County Circuit Court, has been continued in effect pending the commissioner's action.

Indiana Commission Fixes Rates on Federal Court Valuation.

A schedule of increased rates on a valuation fixed by the federal court in Indianapolis, Ind., for the Steuben County Telephone Co. was approved July 20 by the Indiana Public Service Commission. The company, owned by Max F. Hosea and the Indiana Telephone Securities Corp., obtained a schedule of rates which will give the company an increase of $7,845 a year in subscriber revenues.

The basic charges of $4.25 for individual service in Angola and $3.50 for Fremont, Pleasant Lake, Orland and Hamilton, were fixed on the federal court's recent valuation of $278,444. Before the commission, the company received a valuation of $242,000, which was appealed to the federal court, where the owners presented evidence that $375,000 would be a proper valuation. The court sustained the commission's findings in part and declined to give the company the higher valuation it sought.

Stockholders Seek Receivership for Indiana Telephone Company.

An amended complaint has been filed in the circuit court at Anderson, Ind., in a suit brought by stockholders in the Fortville Telephone Co. for appointment of a receiver. The suit was brought by Charles E. McCord, Stewart Slocum, John W. Hudson, William P. Williams, Mary Stuart, John F. Johnson and Orville L. Morrow, stockholders in the company.

The new complaint is directed against the Fortville Telephone & Gas Co., and Arthur B. Ayres, Max Hosea and Stewart Matlock, who comprise the board of directors. It is alleged that the company was rendered insolvent by the present board of managers, that a receiver should take charge of the property and sell it.

Patrons Ask Decreased Rates; Company Asks Increase.

A request for an increase in telephone rates, made necessary because of the construction of a new exchange building and the installation of automatic telephones, has been filed with the Indiana Public Service Commission by the Lafayette Telephone Co. of Lafayette. The proposed new rates increase the monthly rental for business telephones from $3.50 to $6, single line residence from $2 to $3.25, and party line residence from $1.50 to $2.25.

The petition followed one signed by employes of the Monon Railroad asking for a reduction in rates on the grounds that the subscribers now have to do all the work in making a connection.

Increased Rates Asked by Southwestern Bell at Warren, Ark.

At a special meeting of the City Council of Warren, Ark., July 6, the petition of the Southwestern Bell Telephone Co. for rate increases at its exchange at Warren was considered and Friday, August 3, set as the day for a public hearing of the application of the telephone company.

The company is applying for increases as follows:

One-party line business telephone, from $3.50 to $4.00;
Extension business telephone, from $0.75 to $1.00;
One-party line residence telephone, from $2.25 to $2.50;
Two-party line residence telephone, from $2.00 to $2.25;
Four-party line residence telephone, from $1.75 to $2.00.
Extension residence telephone, from $0.50 to $0.75;

Returns on investment at the present rates are insufficient, the company claims. The proposed rates would bring a return of 6.14 per cent, it is said, against the net return of 2.47 per cent on the present rates.

Pacific T. & T. Acquires Small Property in Idaho.

The Pacific Telephone & Telegraph Co. was recently authorized by the Interstate Commerce Commission to take over the properties of the Stites-Kooskia Telephone Co., which operates exchanges at Kooskia, Stites and Clearwater, Ida., which collectively serve 186 subscriber stations and 13.5 pole miles of toll lines.

On November 10, 1927, the Stites-Kooskia company granted the Pacific company an option to purchase its telephone properties for $5,000, free from all liens or encumbrances. An appraisal made by the chief engineer of the Pacific company found the reproduction cost new of the properties to be $21,035.60, and less depreciation $10,440.72. The estimated value of property to be retired from service is $1,700, from which there will not be any salvage. In 1927 operating revenues and operating expenses from the Stites-Kooskia company properties were $2,886.18 and $2,698 23, respectively.

Rates Increased to Provide for 24-Hour Service.

The Nebraska State Railway Commission has issued an order authorizing the Wauneta Telephone Co. to give a 24-hour service in lieu of the present service, which covers emergency night calls and certain hours on Sunday. Wauneta is in the panhandle section of the state, where big wheat crops are the rule, and her peo-

ple insisted on having service available at all times, especially during the harvest season, which has just begun.

The commission has allowed the company to add 20 cents a month to its present charges for city and rural subscribers and 10 cents a month for switched subscribers. The new rates will be: Business, company-owned telephones, $2.70; business, subscriber-owned, $2.45; residence, company-owned telephones, $1.70; residence, subscriber-owned, $1.45; farm, company-owned telephones, $1.95; farm, subscriber-owned, $1.70; switching service, $7.20 per year, with a discount of $1 a year if paid a year in advance. A discount of 25 cents will be allowed from all rates but switched, for advance payment by the tenth of the month.

The commission does not feel that it is necessary for a valuation of the property, as the company has never paid any cash dividends, and the management does not figure on seeking to earn them in the future. The reports show that the earnings have not been excessive and that the rates as asked are not even up to the standard for exchanges of this size.

The increased rates will add $900 a year income to the revenues, but the commission does not think that this will much more than pay for the added cost of giving it, and that as the subscribers seem willing to pay for a service they desire, the rates will be confirmed.

New Jersey Company Allowed Increase Pending Appraisal.

A conditional increase of 50 cents per month per subscriber was granted the New Jersey Telephone Co., of Lebanon, by the New Jersey Public Utility Commission recently. The increase in rates tentatively authorized took effect July 15 and at the same time the company was to inaugurate 24-hour service.

The commission's engineers are to make an appraisal of the company's property. When this appraisal is completed it will be submitted to all interested. If it is found thereby that the company is making too large a return on the investment, another hearing will be held when the company will have to show cause why its rates should not be reduced. It is expected the survey and appraisal will have been completed by Labor Day.

Botetourt Company, Va., Properties Acquired by Bell.

The Interstate Commerce Commission recently authorized the Chesapeake & Potomac Telephone Co. of Virginia to acquire the properties of the Botetourt Telephone Co., Buchanan, Botetourt county, Virginia, which serves 188 subscriber stations and 17.28 pole miles of toll lines.

On April 17, 1928, the Chesapeake company contracted to purchase all of the properties of the Botetourt company, free from all liens or encumbrances, for $2,350, payable in cash. An appraisal made by the inventory and costs engineer of the Chesapeake company found the reproduction cost new of the properties to be $9,404, and less depreciation, $3,212. The Chesapeake company estimates that it will be required to expend $7,731 to rehabilitate the existing plant. This estimate does not include the cost of making additions and extensions. In 1927 receipts and disbursements of the Botetourt company were $2,137.95 and $2,100.54 respectively. Upon acquiring the properties the Chesapeake company will make certain adjustments in the present rate schedules.

At the hearing there was introduced in evidence a certified copy of a petition requesting the Chesapeake company to acquire the properties, which was signed by 142 subscribers of the Botetourt company.

Corporation Receives Authority to Take Over Property.

The Wisconsin Railroad Commission recently authorized the Lisbon Telephone Corp. to acquire the property operated by the Lisbon Telephone Co. for the sum of $9,900 subject to a mortgage debt of $1,000.

The Lisbon corporation was authorized to issue 99 shares of common stock of the par value of $100 per share, making a total issue of $9,900.

The engineers of the commission made an estimate of the fair value of the property, and from their report it appeared that the purchase price was within reason. The commission, therefore, authorized the acquisition at this value and the issuance of common stock in like amount.

Rate Discrimination Removed by Authorization for Increase.

The Wisconsin Railroad Commission recently authorized the Mt. Vernon Telephone Co., which operates exchanges at Mt. Vernon, Glarus and Verona, and serves approximately 890 subscribers, to increase its schedule of monthly rates. The old and new net monthly rates are as follows:

	Old.	New.
Residence, one party, wall set	$1.50	$1.75
Residence, one party, desk set	1.65	1.90
Residence, two party, wall set	1.50	1.65
Residence, two party, desk set	1.65	1.80
Residence, four party, wall set	1.50	1.50
Residence, four party, desk set	1.65	1.65

From the testimony presented at the hearing it appeared that the company took the position that inasmuch as there was only one rate for residence service the subscriber had no choice as to the class of service he was to receive but was obliged to accept whatever class of service the company desired to give him. This resulted in those subscribers who were compelled to take three and four-party service being discriminated against as compared with those subscribers given one or two party service.

The only remedy for this situation, the commission found, is to furnish all subscribers with the same class of service at the same rate or to establish a schedule of rates commensurate with the cost of rendering each class of service and permit each subscriber to elect the class of service suited to his needs.

The differentials of 10 cents per month between one and two-party service and of 15 cents per month between two and four-party service are no more than adequate to cover the difference in the cost of rendering the respective classes of service and as the rates in themselves are not unreasonable, the commission stated, they were approved.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

July 7: Chesapeake & Potomac Telephone Co. of Virginia authorized to acquire the properties of the Botetourt Telephone Co., located at Buchanan, Botetourt county, Va.

July 6: Mountain States Telephone & Telegraph Co. authorized to acquire the properties of the Pioneer Telephone Co., located in the state of Montana.

July 31: Hearing at Washington before Examiner Davis in the matter of the proposed purchase by the Southern Bell Telephone & Telegraph Co. of the properties of the Homestead Telephone Co. located in Dade county, Fla.

ALABAMA.

July 9: Order issued approving an increased schedule of rates, varying from 50 to 75 cents per month, for Red Bay, in Franklin county. The system is operated by the Southern Bell Telephone & Telegraph Co. and the petition asking for the increase was from the residents of the city and the company, upon condition that $8,000 in new equipment would be installed. This equipment has been installed.

July 9: Order issued approving sale of the Linden system by the Thomaston Telephone Co. to M. Brotherton.

July 9: Order issued approving the sale of the Midway Telephone Co. property by Linnie Banks and C. W. Banks to the South Central Telephone Co., of Chicago.

CALIFORNIA.

July 18: Permission granted to W. E. Hills, operating Bass Telephone Lines, which connect to other lines or to telephone stations in Redding, Churn Creek, Buckeye, Bella Vista, Palo Cedro, Stillwater, Millville, Fern Ingot, Bend, Round Mountain, Montgomery Creek, Wengler, Burney, Carbon and Fall River Mills, all in Shasta county, to transfer the system to Nevada, California & Oregon Telegraph & Telephone Co. The latter company will operate the lines so acquired with its present properties as one system.

ILLINOIS.

July 11. Order approved suspending until November 24, 1928, proposed rates for service in Mattoon, Oakland, Humboldt, Shelbyville, Tower Hill, Ashmore and Charleston, stated in rate schedules Ill. C. C. 2 of the Illinois Southeastern Telephone Co.

July 12: Order approved authorizing the

Pike County Telephone Co. to issue and sell its first mortgage bonds, to be dated February 1, 1925, in the aggregate amount of $30,000, the bonds to be sold so as to net the company not less than 95 per cent of the principal amount thereof.

July 12: Order approved authorizing the Jerseyville Telephone Co., Inc., to issue and dispose of $10,000 aggregate principal amount of its promissory notes, dated as of July 1, 1926, maturing July 1, 1933, bearing 6 per cent interest, the notes to be disposed of so as to net the company not less than the principal amount thereof.

INDIANA.

July 10: The Southern Indiana Telephone & Telegraph Co., of Seymour, filed petition asking for increased rates at New Washington and requesting authority to abandon free service between New Washington and Charlestown and between New Washington and Jeffersonville.

July 10: Petition granted of the Batesville Telephone Co. for authority to issue $30,000 of gold notes. The notes will bear 6 per cent interest. The proceeds will be used to pay current indebtedness and for extensions and improvements of the company's lines.

July 13: Petitions for rate increases filed by the Oaktown Telephone Co., the Bruceville Telephone Co., and the Freelandville Telephone Co., all of Knox county, and the Pike County Telephone Co.

July 17: Hearing held on petition of the Providence Telephone Co., for the establishment of toll rates between that company and the Johnson County Telephone Co., of Franklin.

July 17: Petitions filed asking approval of the consolidation of the Walkerton, North Liberty and New Carlisle Telephone companies and of the issuance of 900 shares of common stock by the surviving concern. The stock is to be distributed among present owners of the merging companies. The three companies are said to be worth approximately $65,000.

July 17: Declaring that patrons of the Lafayette Telephone Co., Lafayette, now have "to do all the work" because dial telephones have been installed, 100 residents of that city, all employes of the Chicago, Indianapolis & Lafayette Railroad, filed a petition asking a reduction in rates.

July 18: Abandonment of the telephone exchange at China, Jefferson county, and permission to render service from the Madison exchange asked in a petition filed by the Southern Indiana Telephone & Telegraph Co.

July 18: The Home Telephone & Telegraph Co., of Fort Wayne, filed petition asking approval of the purchase of 440 shares, the controlling interest in the Noble County Telephone Co., Albion, at $160 a share.

July 18: Patrons of the Brookville Telephone Co. asked the commission to see that they get better service.

July 19: Petition filed by LaFayette Telephone Co., LaFayette, for increase in rates made necessary because of construction of new building and installation of new equipment.

July 20: Order issued approving schedule of increased rates for Steuben County Telephone Co. on valuation fixed by federal court in Indianapolis.

July 20: Clyde L. Cummings granted authority to buy the Brownsburg Telephone Co. from William L. McCrea for $16,000.

July 20: The Pike County Telephone Co. authorized to issue $50,000 of 7 per cent preferred stock to cover the expense of improvements made in the last year. The company also obtained authority to give a 25-cent discount to customers for prompt payment of bills.

What Does the Future Hold for You?

THIS is a question everyone is interested in. What does the future hold for you? Will you be prepared for the many changes the future will demand? Will you grow with each added year? Will your telephone company "keep the pace?" Our more than thirty years in financing, organizing and operating telephone companies have proved definitely that we have aided many telephone companies in "keeping pace." Our experience will prove beneficial to you in your expansion program. May we hear from you regarding your needs?

PUBLIC UTILITIES DEPARTMENT

UNITED TRUST COMPANY

ABILENE - - - KANSAS

Mr. Telephone Man — Advertise Direct to Your Subscribers! New Series Telephone Advertisements ready for mailing. Used by Telephone Companies everywhere.

YOU are always interested in securing new subscribers, selling extension telephones, and maintaining good public relations. Isn't that true? Can you think of a more effective or cheaper way to call the attention of your subscribers to matters concerning the telephone business than by a direct method?

We have prepared a series of telephone advertisements on government postcards, covering *ten subjects*, effectively written and well illustrated, which afford you a direct medium. All they require is the local manager's signature, and they are ready for mailing. No additional postage charge. When you realize the amount of trouble and money they will save, you will agree with hundreds of other telephone men, that they are "GREAT." Take advantage of this opportunity and mail us your check for $4.00 for a set of 100 cards. No orders accepted for less than 100.

We will prepare special subjects, illustrated and written, at a cost of $5.00 a hundred. We also furnish pamphlets on any subject. Write for prices.

Special offer—1,000 cards, or 10 complete sets. Price, $35.00. No C. O. D. shipment. Order today.

Telephone Advertising Company

107 Bankers Life Building

Lincoln, Nebraska

KANSAS.

July 7: Supplemental order issued permitting the United Telephone Co. to file an amended schedule of rates to be charged for its common battery service at Oberlin as soon as equipment is installed and in operation, as follows: Individual line business, $3.25 per month; individual line residence, $2.00 per month; other classes of service to remain the same as before.

July 11: A. E. Prettyman and C. J. Ray filed application for authority to sell their telephone plant and property at Arlington to the Western Telephone Corp.

July 12: Application filed by Alton T. Roberts asking authority to purchase the telephone system and property at Harris. Mr. Roberts does the purchasing of the small telephone properties for the Kansas Telephone Co. He also asked authorization of the sale of the properties at Westphalia, Edwardsville and Piper by himself to the Kansas Telephone Co., and for permits to operate in each of these cities and surrounding territories.

July 19: In the matter of the complaint of the Haverhill Cooperative Telephone Association of Beaumont vs. the Latham Telephone Co., supplemental order issued permitting the switching service fee to be 50 cents per month per subscriber, the fee to be equally divided between the two exchanges. Both exchanges interested have agreed to this arrangement.

July 25: Hearing on application of the Arcadia Telephone Co. for permission to sell its telephone plant and property to the Kansas Telephone Co.

July 25: Hearing on application of the Mulberry Telephone Co. to sell its telephone plant and property to the Kansas Telephone Co.

July 25: Hearing on application of the Walnut Telephone & Electric Co. for permission to sell its property to the Kansas Telephone Co.

July 25: Hearing on application of Alton T. Roberts for permission to sell his telephone plants and property at Edwardsville and Piper, to the Kansas Telephone Co.

July 25: Hearing on application of Alton T. Roberts for permission to sell his telephone plant and property at Westphalia, to the Kansas Telephone Co.

July 25: Hearing on application of the Kansas Telephone Co. for a writ of convenience and authority to transact the business of a telephone utility at Westphalia.

July 25: Hearing on application of the Western Telephone Corp. for a certificate of convenience and authority to transact the business of a telephone utility at Arlington.

July 27: Hearing in the matter of the complaint of the Farmers Mutual Telephone Co. of Jewell county with exchanges at Burr Oak vs. the Esbon Telephone Co.

September 5: Hearing in the matter of the complaint of C. V. Ordway vs. the United Telephone Co.

September 7: Hearing on application of the Central Kansas Telephone Co. for permission to change the rates at its exchange at Hillsboro.

MISSOURI.

July 10: Joint application granted of Charles Mahon to sell and the Midwest Telephone Co. to purchase the exchange and system at Linn for the sum of $6,000.

July 12: Miller Telephone Co. authorized to issue $15,000 in principal amount of first mortgage 6 per cent gold bonds dated July 1, 1928, to mature 10 years from that date.

July 13: Steele & Cooter Telephone Co. authorized to be sold to J. D. Thom of Chicago for the sum of $25,000.

July 13: W. J. Ray and Bessie Ray, owners of the Citizens Cooperative Telephone Co., Holland, Pemiscot county, authorized to sell their property to J. D. Thom of Chicago for the sum of $400.

July 14: Western Power, Light & Telephone Co. authorized to purchase and hold 1,000 shares without nominal or par value of the common capital stock of the Central West Missouri Telephone Co.

July 17: The West Plains Telephone Co. at West Plains filed an application for an increase in rates. The company declared its property valuation is not less than $75,000 and that the present rates are only returning 5 per cent, while a fair return should be at least 8 per cent. It asks that it be permitted to increase the business rate from $3 to $3.75 a month and the residence from $1.50 to $2.25. The company says in its application that its exchange was modernized at the request of numerous patrons and that with the added investment the old rates are not only inadequate for a proper return but are in effect confiscatory.

July 20: Central West Missouri Telephone Co. granted authority to buy the telephone utilities owned by John Bevan and known as the Macon & Chariton County Exchange at and near New Cambria.

July 20: Midwest Telephone Co. authorized to charge increased rates for service at its exchange in Butler after the company had constructed a modern office building and established central energy system in the city of Butler.

July 20: Middle States Utilities Co. of Missouri authorized to file new rate schedule for its Jamesport exchange.

NEBRASKA.

July 16: Complaint filed by Malcolm Telephone Co. against Northwestern Bell Telephone Co., alleging that the latter re-

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fuses to make what complainant alleges to be a proper division of toll message collections.

July 17: In the matter of the demand of certain representatives of subscribers of Beatrice exchange of Lincoln Telephone & Telegraph Co. for data with respect to operations thereof, to enable investigation of necessity of increased rates asked for; found to be reasonable and as of the nature usually supplied in such applications, ordered granted.

July 18: In the matter of the application of the Wauneta Telephone Co. for authority to give 24-hour service instead of limited service now offered, and for permission to increase rates sufficient to take care of added expense; found reasonable and necessary, and there being no objections from patrons and the rates themselves not being excessive, ordered that permission asked for be granted.

NEW JERSEY.

July 2: New Jersey Telephone Co., of Lebanon, granted a conditional increase of 50 cents per month per subscriber, effective July 15. The company is to inaugurate 24-hour service.

OHIO.

July 11: The Improved Telephone Co., which serves Strasburg, Bolivar and adjacent territory, filed schedule of increased rates effective August 1. Officials of the company say the increase is necessary because of recent improvements.

July 20: Authority granted the Ohio Cities Telephone Co., New Philadelphia, to purchase the Sugar Creek exchange and plant from the Berlin Telephone Co. for a consideration of approximately $70,000.

August 15: Resumption of hearings in state-wide investigation of rates of Ohio Bell Telephone Co. postponed to this date from August 6 by mutual agreement. The commission has reserved balance of month for the proceedings.

WISCONSIN.

July 3: Amalgamation of the Cedarburg and Grafton telephone exchanges and the Thiensville and Freistadt exchanges, each to serve half of the area now served by the four exchanges, proposed by the Wisconsin Telephone Co. at a hearing at Cedarburg. The proposal embodies increased rates. The combined exchanges would be at Cedarburg and Thiensville.

The hearing was held at the request of Cedarburg merchants and city officials, who protested against alleged discrimination in rates. Cedarburg's suggestion was for one exchange to serve the whole area, preferably located at Cedarburg. The company originally proposed that uniform toll rates be established among the exchanges. The hearing was adjourned until some later date and the commission will consider the company's request for a detailed investigation of rates.

July 7: Lisbon Telephone Corp. authorized to issue 99 shares of common stock of the par value of $100 per share, the funds from which are to be used to acquire the property now operated by the Lisbon Telephone Co.

July 7: Cream Valley Telephone Co. ordered to rescind all present rules and regulations relating to the collection of subscribers' accounts and establish a new set of rules.

July 7: Mount Vernon Telephone Co. authorized to place in effect an increased schedule of rates.

July 14: Coloma Telephone Co. authorized to discontinue service over grounded toll line between Columa and Wautoma and to provide toll service over a new metallic line at a rate of 15 cents for person-to-person calls of five minutes or less.

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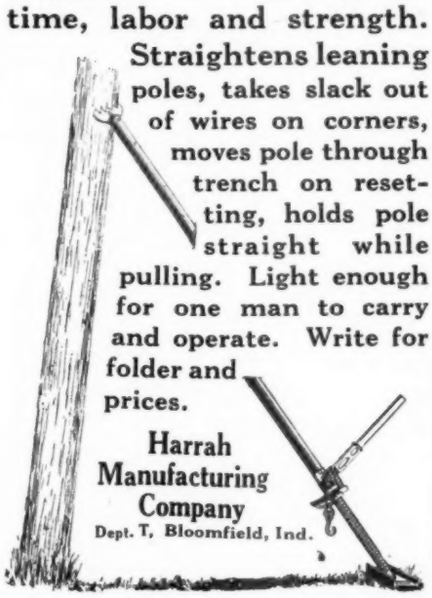

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Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

Incorporations and New Telephone Companies.

DOVER, DEL.—A charter has been granted the Ruskin Telephone Corp. which has been incorporated with 100,000 shares of common stock. Address not given.

WILMINGTON, DEL.—A charter has been granted the Investors Telephone Co., which has been incorporated with 200,000 shares of common stock. Address not given.

CHICAGO, ILL.—The General Telephone Co. of Illinois has been incorporated with a capital of 2,000 shares no par value. Correspondent: Thomas R. Condon, 231 S. La Salle Street.

Financial.

CHICAGO, ILL.—The Central Union Telephone Co. has decreased its stock from $3,000,000 to $2,000,000. Correspondent: Illinois Bell Telephone Co., 212 W. Washington Street.

Elections.

BOONEVILLE, KY.—The annual meeting of the Owsley Telephone Co. was held here recently, and A. J. Creech reelected president, J. E. Seale, vice-president, D. W. Barrett, secretary-treasurer, and J. S. Rowland, director.

WADENA, MINN.—At the recent annual meeting of the Wrightstown Telephone Co., the following officers were elected: President, Roy A. Smith; secretary, Jack C. Lieder; treasurer, Everett M. Edes; director for three years, Roy A. Smith.

PLEASANT SHADE, TENN.—The Union Camp Home Telephone Co. held its regular annual meeting recently, transacting the ordinary business of the concern. The president is Miles W. Hargis, with Robert Hargis vice-president, and M. M. Jenkins, secretary and treasurer. These were reelected and will serve another year. An assessment of 50 cents per member was made against all the stockholders. This fund is to be used to meet current expenses. This company serves a community about eight miles north of this village.

DODGEVILLE, WIS.—The North Dodgeville Telephone Co. elected the following officers at their recent annual meeting: President, Charles Anderson; secretary, J. E. P. Roach; treasurer, August Harms; directors, William Cutler and Harry Vivian; lineman, W. L. Carley.

Construction.

GADSDEN, ALA.—The Southern Bell Telephone & Telegraph Co. has been granted a permit to place its wires and cables underground in the business section of Gadsden. The cables will be ready to tie with the new $150,000 exchange building system in December.

LAKELAND, FLA.—Several thousand dollars have been spent by the Peninsular Telephone Co. here recently in removing overhead lines and putting them underground, and in replacing open-wire lines with cable equipment.

MONTROSE, IOWA. — The Iowa-Illinois Telephone Co. is razing the present telephone building here to make way for a new and more modern structure to be used as its exchange and district headquarters. The exchange is temporarily located in an adjoining building, pending opening of the new building in about six weeks.

BRUNSWICK, MO.—The Central West Missouri Telephone Co. is erecting a new building here.

OGALLALA, NEBR.—The Platte Valley Telephone Corp. has begun the construction of a new toll line from Ogallala to Oshkosh. The company has been supplying this service with a single metallic circuit of iron wire and on various sized poles, a leftover from the days when it was a part of the property of the Wehn Telephone Co. This was hard to keep in service condition, and is to be supplanted by a line of 25-foot poles of six inches in diameter for most of the line. There will be three complete toll circuits available, two over the four copper wires and the usual phantom circuit. Another change contemplated by the company is the making of Oshkosh, the county seat of Garden county, a toll center. It will be made the center of the district for operating purposes, and will mean the addition of one or more operators to take care of the re-routed toll business.

BEGGS, OKLA.—The Beggs Telephone Co. will spend $8,000 this summer in overhauling the local telephone system.

ALLENTOWN, PA.—Construction of the Lehigh Telephone Co.'s new $160,000 headquarters building will be completed before January 1, 1929, George W. Wolf, manager, indicated recently.

Miscellaneous.

ELDORADO, ILL.—The Illinois Commercial Telephone Co. has purchased the Home Telephone Co. of this place.

PRINCEVILLE, ILL.—The Keck Telephone Co., one of the city's oldest business institutions, was sold recently to the Community Telephone Co. of Chicago. This company owns 25 telephone exchanges throughout Illinois, two of which in this section are those at Chillicothe and Henry.

Mr. Risen of Chillicothe, district manager of the company, will be in charge of the Princeville office. The present force will remain in the local office.

VILLA GROVE, ILL.—Homer Howard of Terre Haute, Ind., is the new manager for the Standard Telephone Co., succeeding Jack Bartram, who will be wire chief at Tuscola.

BROWN'S VALLEY, IND.—Walter VanCleave, proprietor of the telephone exchange here has sold his property to J. T. Detchon of New Richmond and Max Hosea of Indianapolis.

WAVELAND, IND.—The Waveland Telephone system, which was bought a few months ago from J. W. Robertson, Indianapolis, by Carl Swain, of Russellville, has been sold by him to John Detchon, of New Richmond. The same deal also included the sale to Mr. Detchon of the Russellville telephone system by T. E. Conrad. The two systems will become a part of the Attica-Greencastle combination.

FAIRBANK, IOWA.—The Bentley Telephone Co. has been sold to the Standard Public Service Corp., Wheeling, W. Va. The exchange has been owned and operated by A. Bentley and son, R. S. Bentley, for 20 years. R. S. Bentley will be the new manager and the same operators will be employed.

GLADBROOK, IOWA.—Employes of the Central Iowa Telephone Co. joined with staffs of the Iowa Railway & Light Corp., the Mesquakie Millings Co. and the Tama & Toledo Railway Co. at their annual outing at Conant's park, near here recently, 300 guests being present. The event was directed by J. P. Walters, division manager for the electric corporation.

GLIDDEN, IOWA.—The Standard Public Service Co. has purchased the Glidden Telephone Co.

LINCOLN, NEBR.—A number of small telephone companies in Nebraska have suffered heavily in the last three weeks from hail and windstorms of unusual violence, along with some of the larger organizations. One storm in southwestern Nebraska caused a total loss of over a million dollars to buildings and crops on the farms

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WANTED — Telephone man experienced in all branches magneto exchange, except clerical work. Salary $150.00 to start. Address Kohler, Cambridge Springs, Pa.

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The Board of Directors of the National Telephone and Telegraph Corporation, have declared the regular dividend of $1.75 per share on the First Preferred Stock and 87½c per share on Class "A" Stock, for the quarter ending July 31, 1928, payable August 1, 1928, to stockholders of record at close of business July 25, 1928.

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Auto. Elec. late type desk sets complete with dials and Ind. Coil ckt., black finish wood signal sets with either straight line or harmonic ringers @.. 6.50

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(Continued on Page 42)

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of that section, and other storms in Pierce, Cherry, Sheridan, Platte and Colfax counties ran the total up to a million and a quarter dollars. Many pole lines were blown over, but the damage was not so great that service was restored within a short time.

LOWVILLE, N. Y.—At a meeting of the Black River Telephone Co. at the general offices here recently the resignation of Charles W. Pratt of Boonville from the board of directors was accepted and G. G. W. Green of Gloversville, vice-president and general manager of the Glen Telephone Co., was elected president of the Black River company. Mr. Green has been connected with the Glen company, which operates in Fulton and Montgomery counties, for the last 20 years.

The resignation of Mr. Pratt ends his administration of 26 years, during which the Black River Telephone Co. increased its stations from 100, covering a very restricted area, to a system operating throughout the western Adirondacks in seven counties and serving more than 6,300 stations.

TIFFIN, OHIO.—The Tiffin Consolidated Telephone Co. now serves more than 4,200 stations from its local switchboards. That number is indicated in the new directories recently issued by the company. This is an increase of 200 over 1927.

VINITA, OKLA.—E. Noe of Richland, Mo., has purchased the Welch telephone system from W. E. Limbocker of Welch.

MCCORMICK, S. C. — The Continental Telephone Co. of St. Paul, Minn., has purchased the McCormick Telephone Co.

BRISTOL, VA.—Purchase of the Wythe County Mutual Telephone Co. of Wytheville, Va., by the Inter-Mountain Telephone Co. was announced here recently by President W. N. McAnge, of the Inter-Mountain corporation, owners of the Bristol and Johnson City exchanges.

The Inter-Mountain company will take over the various exchanges and general business affairs of the Wythe concern on August 1, according to announcement of President McAnge.

The Wythe county company has been operating non-competitive exchanges at Wytheville, Max-Meadows, Ivanhoe and Laswell, Va., and has about 900 subscribers.

A program for the installation of modern new equipment in the four cities owned by the Wythe county concern will begin immediately, and it is expected that the work will be completed by January 1, 1929, according to reports.

The exchanges at Wytheville, Max-Meadows, Ivanhoe and Laswell will be equipped with the latest telephone equipment similar to that now being used at Johnson City and Bristol.

KELSO, WASH.—A trust indenture securing an issue of $3,700,000 worth of bonds of the West Coast Telephone Co. was filed at the Cowlitz county auditor's office recently. The United States National bank of Portland is named as corporate trustee and C. L. Lesourd, Seattle, as individual trustee. The West Coast Telephone Co. was formed recently to take over a number of western Washington and Oregon telephone systems including that of the Lewis River Independent Telephone Co.

PARDEEVILLE, WIS. — The Pardeeville Telephone Co. has sold its plant to F. H. Runkel, Portage, manager of the Portage Telephone Co. A new exchange building will be erected here at once, and the entire business section will be cabled and an automatic system installed. P. H. Smith, manager of the Pardeeville Telephone Co., will be retained by the new owners as resident manager.

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